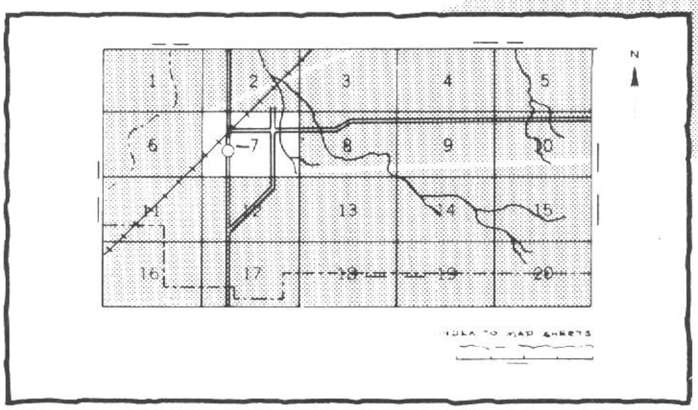
Soil survey of

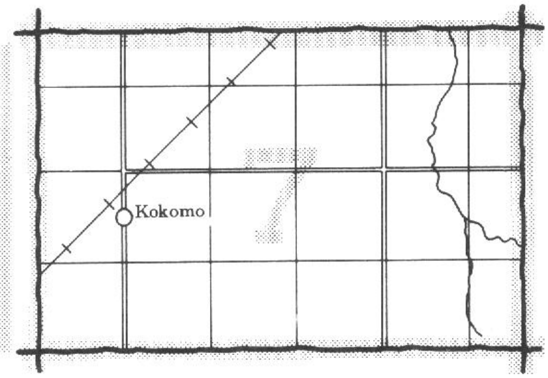
Allen Parish, Louisiana

United States Department of Agriculture
Soil Conservation Service in cooperation with
Louisiana Agricultural Experiment Station

HOW TO USE

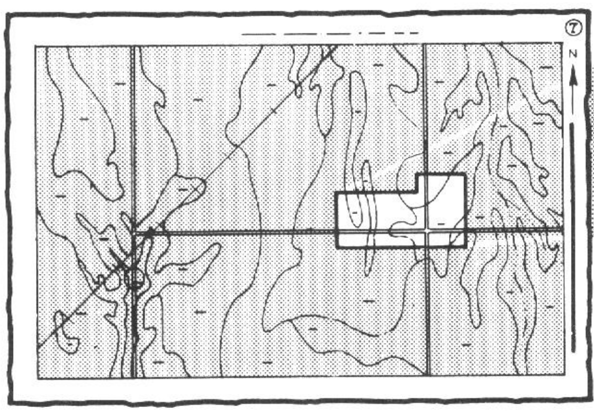
1. Locate your area of interest on the "Index to Map Sheets" (the last page of this publication).

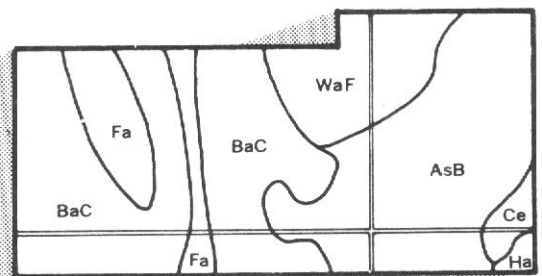




2. Note the number of the map sheet and turn to that sheet.

3. Locate your area of interest on the map sheet.





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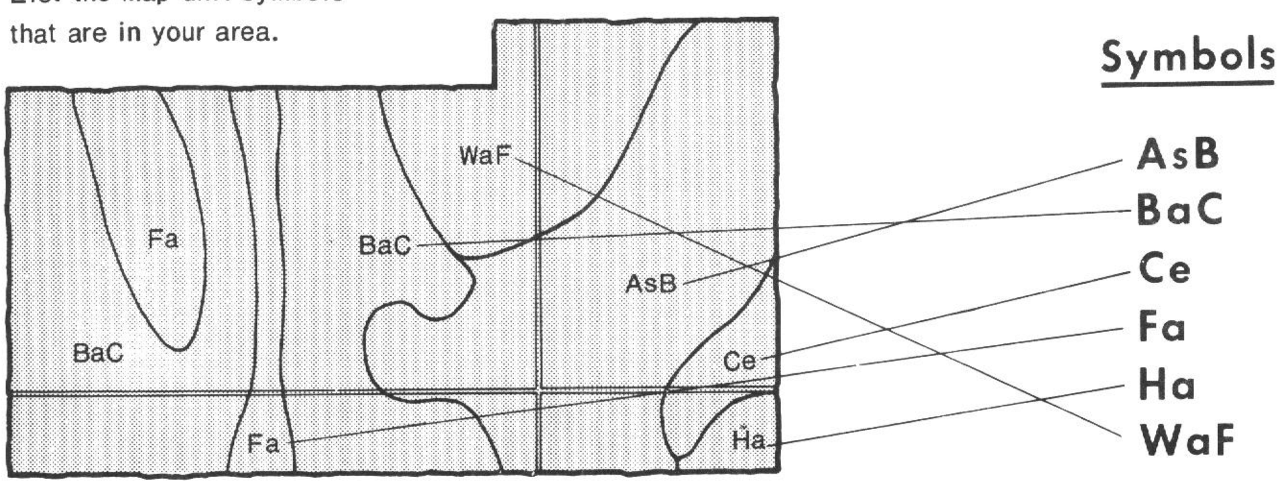
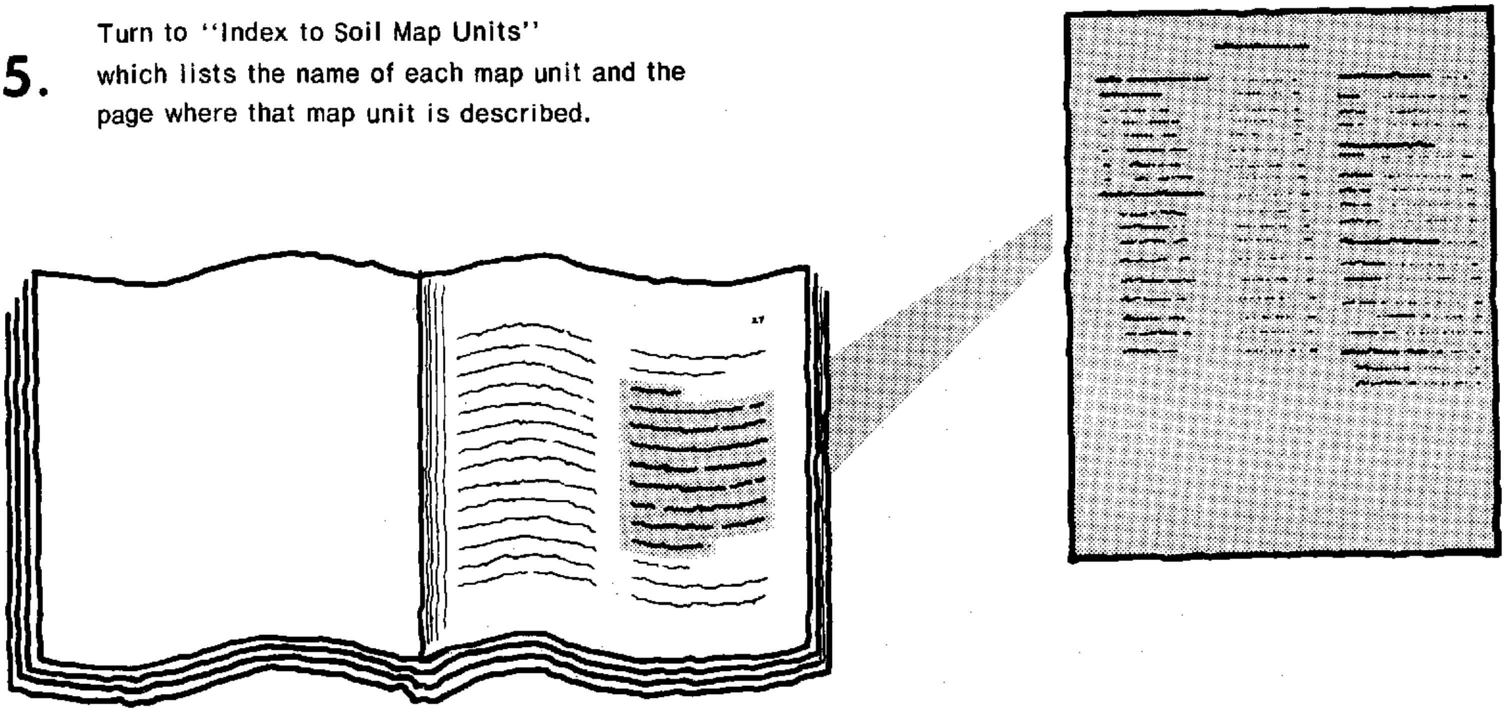
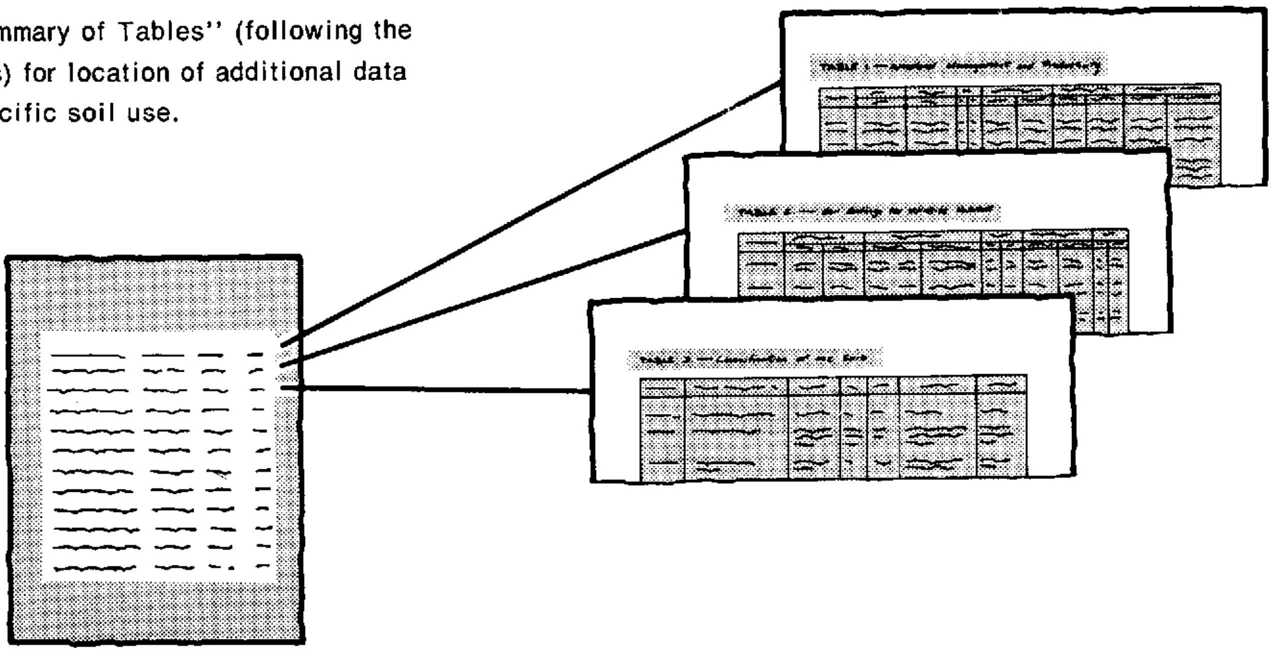


THIS SOIL SURVEY

5. Turn to "Index to Soil Map Units" which lists the name of each map unit and the page where that map unit is described.



6. See "Summary of Tables" (following the Contents) for location of additional data on a specific soil use.



7. Consult "Contents" for parts of the publication that will meet your specific needs. This survey contains useful information for farmers or ranchers, foresters or agronomists; for planners, community decision makers, engineers, developers, builders, or homebuyers; for conservationists, recreationists, teachers, or students; to specialists in wildlife management, waste disposal, or pollution control.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other federal agencies, state agencies including the Agricultural Experiment Stations, and local agencies. The Soil Conservation Service has leadership for the federal part of the National Cooperative Soil Survey. In line with Department of Agriculture policies, benefits of this program are available to all, regardless of race, color, national origin, sex, religion, marital status, or age.

Major fieldwork for this soil survey was performed in the period 1975-78. Soil names and descriptions were approved in 1978. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1978. This survey was made cooperatively by the Soil Conservation Service and the Louisiana Agricultural Experiment Station. It is part of the technical assistance furnished to the Calcasieu Soil and Water Conservation District.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

Cover: Soybeans are a major crop in the survey area. This field of soybeans is on Glenmora silt loan, 1 to 3 percent slopes.

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Issued September 1980

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foreword

This soil survey contains information that can be used in land-planning programs in Allen Parish. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

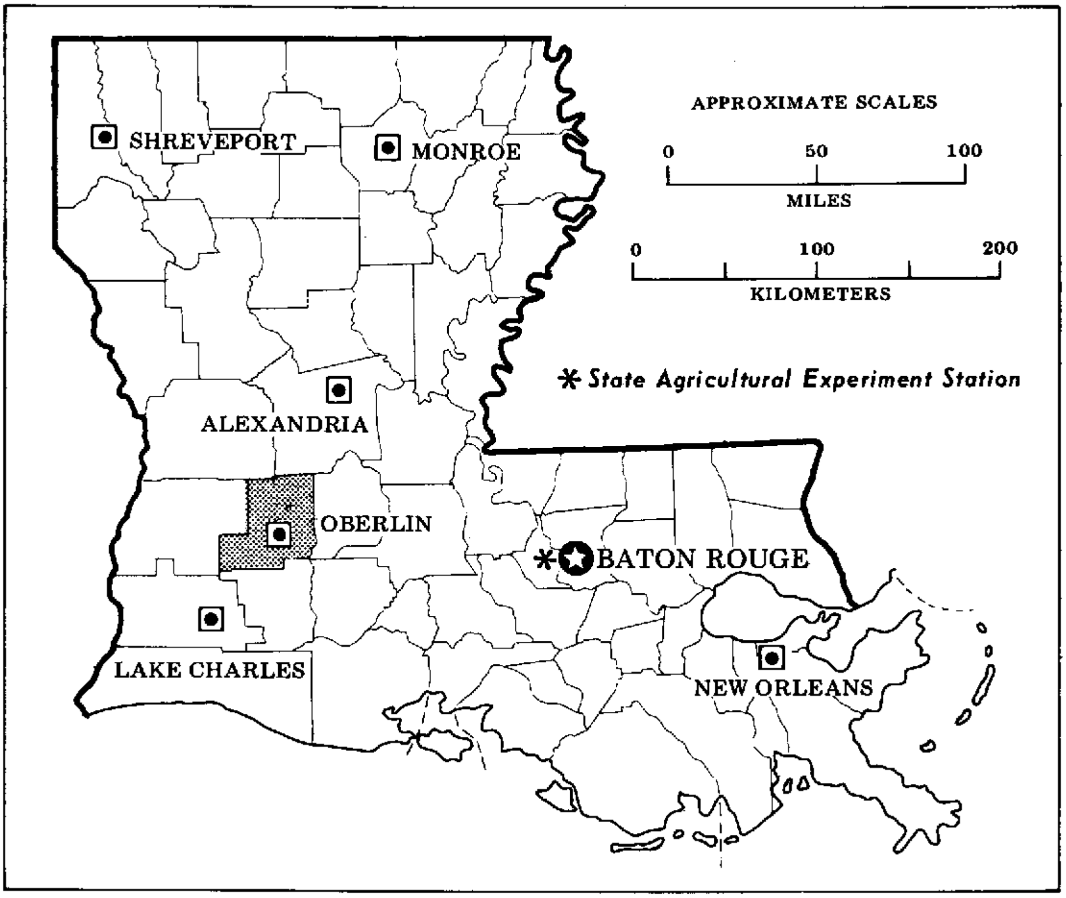
This soil survey is designed for many different users. Farmers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to insure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Soil Conservation Service or the Cooperative Extension Service.

Alton Mangum

Alton Mangum
State Conservationist
Soil Conservation Service



Location of Allen Parish in Louisiana.

soil survey of
Allen Parish, Louisiana

By W. Wayne Kilpatrick, Donald R. McDaniel, J. Kilren Vidrine,
and A. J. Roy, Soil Conservation Service

United States Department of Agriculture, Soil Conservation Service
in cooperation with the Louisiana Agricultural Experiment Station

ALLEN PARISH is in the southwestern part of Louisiana, about 95 miles west of Baton Rouge and about 30 miles southwest of Alexandria. The total land area is 495,360 acres. The population in 1975 was 20,197. Oberlin, the parish seat, has a population of 1,794. About 67 percent of the population is rural, and the rest is urban. Land use is primarily woodland and agriculture. About 70 percent of the land is woodland and 30 percent is cultivated cropland and pastureland. There is no significant trend toward a change in land use.

The parish is made up of two general areas: the forested Coastal Plain Uplands, used mainly for commercial woodland production, and the Coastal Prairie Terrace, used mainly for crops. The elevation ranges from about 185 feet above sea level on the Coastal Plain Uplands to as low as 30 feet above sea level on the Coastal Prairie Terrace (*6*).

general nature of the survey area

This section gives general information concerning the parish. It discusses agriculture, climate, history and development, transportation, and water resources.

agriculture

Allen Parish is principally forested. Its economy depends mainly on the production of timber and timber products. Agriculture is another important source of income. The oil and gas industries also are contributing to the economic growth of the parish.

In 1976, about 70 percent of the parish was woodland, and the rest mainly cropland and pastureland. The principal crops are soybeans and rice. Truck and garden crops are also important.

According to the 1976 annual report of the Louisiana Cooperative Extension Service, 346,500 acres was woodland, 70,000 acres soybeans, and about 220 acres watermelons. The Allen Parish office of the Agricultural Stabilization and Conservation Service reported that in 1976 rice was planted on 27,128 acres and cotton on 114 acres. In 1976, the major crops in order of cash value were soybeans, rice, watermelons, and cotton. Other crops were peppers, wheat, and corn.

The acreage of cotton and corn has significantly decreased during the past 30 years. These crops have been replaced by rice and soybeans. In recent years the acreage of rice has been decreasing somewhat and the acreage of soybeans has been increasing.

climate

By Dr. Robert A. Muller, Department of Geography and Anthropology, Louisiana State University.

Allen Parish is part of a broad region of the southeastern United States that has a humid, subtropical climate. The parish is dominated by warm, moist, tropical air from the nearby Gulf of Mexico. This maritime tropical air is displaced frequently in winter and spring by incursions of continental polar air from Canada, but these polar outbreaks usually last no longer than 3 or 4 days. The incursions of cold air occur less frequently in autumn and only rarely in summer.

Usually there is a sharp contrast in the weather on either side of a frontal boundary separating polar and tropical air. Following passage of a cold front in winter, the sky is typically covered by low clouds driven by strong, gusty, northerly winds; temperatures fall into the 40's; and intermittent drizzle is common. Within 24 hours the sky usually clears, the winds abate, and temperatures overnight may fall low enough to produce frost or freeze conditions. Balmy conditions reign in the tropical air to the south of the cold front. In January air temperatures reach the upper 60's to mid 70's, and sunshine is interrupted by billowy cumulus clouds swept toward the north within the moisture-laden air from the Gulf. Table 1 shows temperature data for the parish.

Temperature variations are associated with plant cover. Temperatures in a dense stand of crops or vegetation are somewhat higher during sunny days and lower during clear, calm nights. Other small temperature variations in the parish are associated with slopes, drainage, and proximity to bodies of water.

Table 2 shows probabilities of the dates of the last low temperatures in spring and the first low temperatures in fall at Elizabeth. Between 1941 and 1970, extremely low temperatures damaging to subtropical crops and vegetation occurred. At Elizabeth, the absolute minimum during that period was 6 degrees F. Bitter polar outbreaks were relatively rare (*5*). During the 30-year period of record at Baton Rouge, for example, daily minimum temperatures fell to 16 degrees F or below only 12 times, 8 of which occurred during the very cold winters of 1962 through 1966.

Precipitation is usually associated with the passage of warm and cold fronts over the parish. Heavy showers, lasting usually no more than an hour or two, occur within vigorous squall lines ahead of cold fronts in winter and spring. General rains of 12- to 24-hour duration are relatively uncommon. In summer, precipitation usually occurs as brief heavy showers and thunderstorms between noon and early evening. Each shower covers a very small area, and the soil moisture conditions often vary widely in summer and autumn. Heavy showers and general rains occur occasionally late in summer and in autumn along with the passage of tropical disturbances and hurricanes from the Gulf. Table 1 also gives monthly precipitation data for Elizabeth.

Rainstorms that produce local flooding and excessive soil moisture occur occasionally. At Elizabeth, the maximum daily rainfall on record is almost 11 inches, and a daily rainfall of 5 inches or more occurs about once every 2 years on the average (*16*). Such rainfall often occurs along stationary fronts in winter and spring or in association with a tropical disturbance in fall.

The climate of Allen Parish is most favorable for crops adapted to a subtropical climate and the local drainage conditions. In most years there is ample sunshine, warm but not excessive temperatures, a long frost-free season, abundant precipitation with little significant snowfall, high atmospheric humidity, and infrequent damaging winds.

Climatic hazards in Allen Parish are mostly infrequent, extreme events that can be especially damaging. Extremely severe weather conditions associated with thunderstorms, squall lines, and hurricanes do occur, but any one location is rarely damaged seriously more than once. These extreme conditions include hailstorms and tornadoes, which occur very infrequently during severe thunderstorms. Tropical storms and hurricanes affect the parish perhaps 2 years in 10. These storms late in summer and in autumn usually bring only cloudy, windy, rainy weather to the parish. Severe hurricanes causing widespread wind damage will probably strike only once in about 3 decades.

Despite the high average rainfall, monthly and seasonal variation of precipitation is great enough to result in short term droughts and wet spells that affect fieldwork and crop yields. The water-budget methodology is a useful system for organization and inventory of relationships between climate, land use, and agriculture (*10*). Figure 1 represents some of the water-budget components that were calculated on a monthly basis from data taken at Ryan Airport in Baton Rouge, about 90 miles east-southeast of the center of Allen Parish. The data for Baton Rouge are reasonably representative of water-budget components in Allen Parish.

Potential evapotranspiration (PE), represented by the upper continuous curve in figure 1, is defined as the maximum amount of evapotranspiration in an area that has a continuous vegetative cover and no shortage of soil moisture. Monthly estimates of PE depend on the energy supplied to the interface, particularly by solar radiation. The Thornthwaite system used in this analysis bases the estimates primarily on air temperature and day length. The seasonal regime of PE is low in winter and high in summer, with relatively little variation from one year to the next.

Actual evapotranspiration (AE), which represents calculated estimates of evaporation and transpiration together, is an index of water use and plant production. Monthly AE cannot be greater than monthly PE, but when AE is less than PE, the difference is the moisture deficit (D), which is an index of water shortage or of the irrigation needed for maximum crop production. The calculations assume that a 6-inch moisture storage capacity is available to vegetation within the root zone. The deficits throughout the parish are greater for shallow-rooted young plants and smaller for deeper rooted plants and for plants grown in poorly drained backswamp areas.

Moisture surplus (S) represents precipitation not lost in evapotranspiration or used for soil moisture recharge. This surplus becomes either surface runoff or ground water recharge. The surplus is strongly seasonal. It is highest in winter and spring and occurs only occasionally in summer and fall. Also, a very large month-by-month variation is evident. Figure 1 also illustrates that wetter

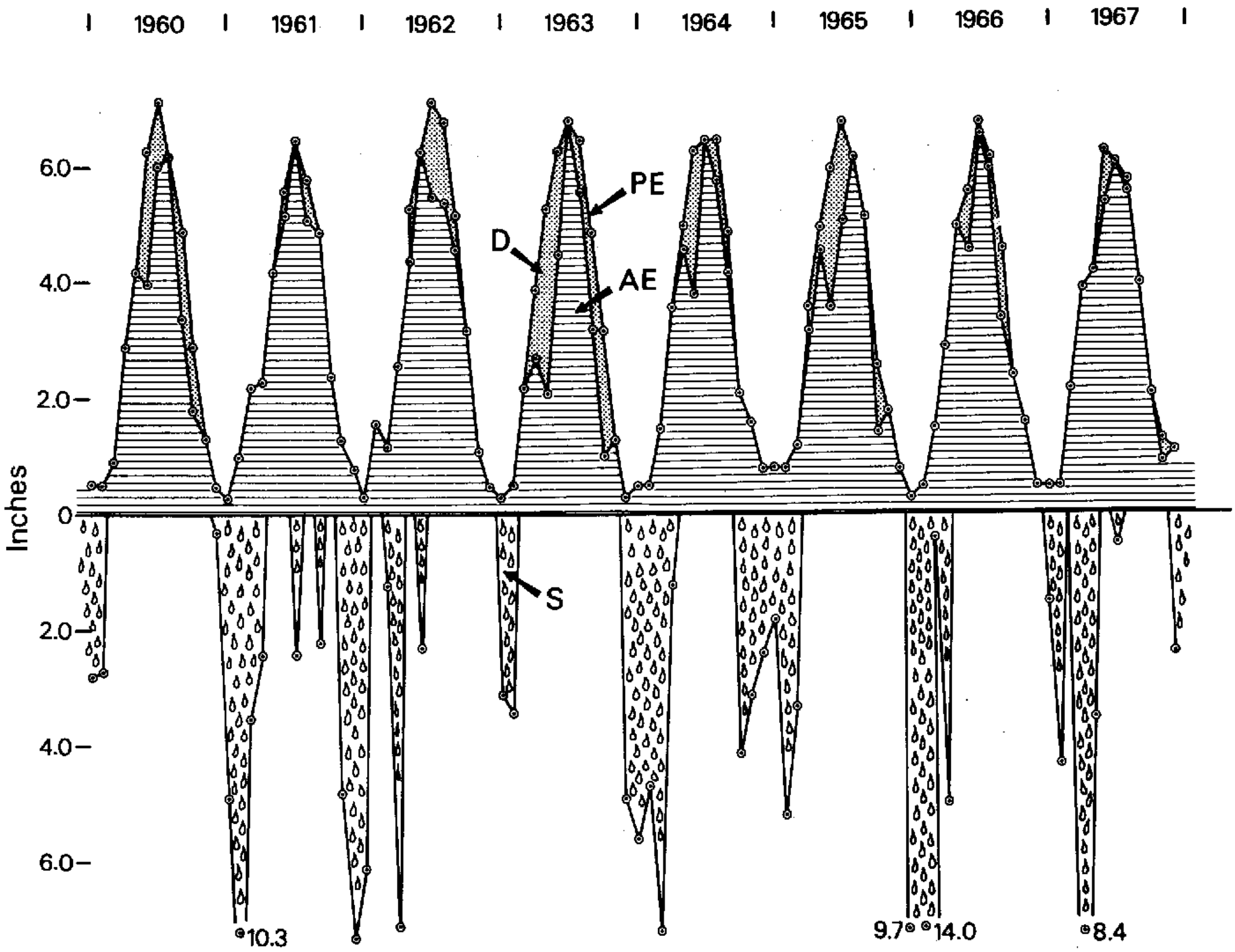


Figure 1.—Water-budget components. Recorded in the period 1960-67 at Baton Rouge.

or drier months, seasons, or years tend to cluster. This variability and clustering has considerable impact on agricultural activities. For example, large surpluses during 1961 were followed by large deficits during 1962 and the first half of 1963.

Figure 2 shows monthly deficits and surpluses summed on a seasonal basis, for the period 1941 through 1970 at Elizabeth. Surpluses can be expected each winter and spring and in fall in some years, but only rarely in summer. Deficits, on the other hand, can be expected each summer and fall, but only occasionally in spring (*9*). Figure 2 illustrates the variability by seasons through the years and the tendency toward clustering.

Data from figure 2 are reorganized in table 3 to show the probability of monthly deficits or surpluses that are equal to or greater than selected amounts. Random variation of deficits and surpluses over the decades was assumed.

history and development

Allen Parish was organized in 1913. It lies in what was known during the Spanish and French occupancy of Louisiana as the "neutral strip" separating Spanish Mexico from French Louisiana.

The earliest known inhabitants of this region were the Attakapa Indians. During much of the 18th century, the only settlers in this region were trappers and traders. The first permanent settlers came into the area about 1816. The French and Acadians settled largely in the

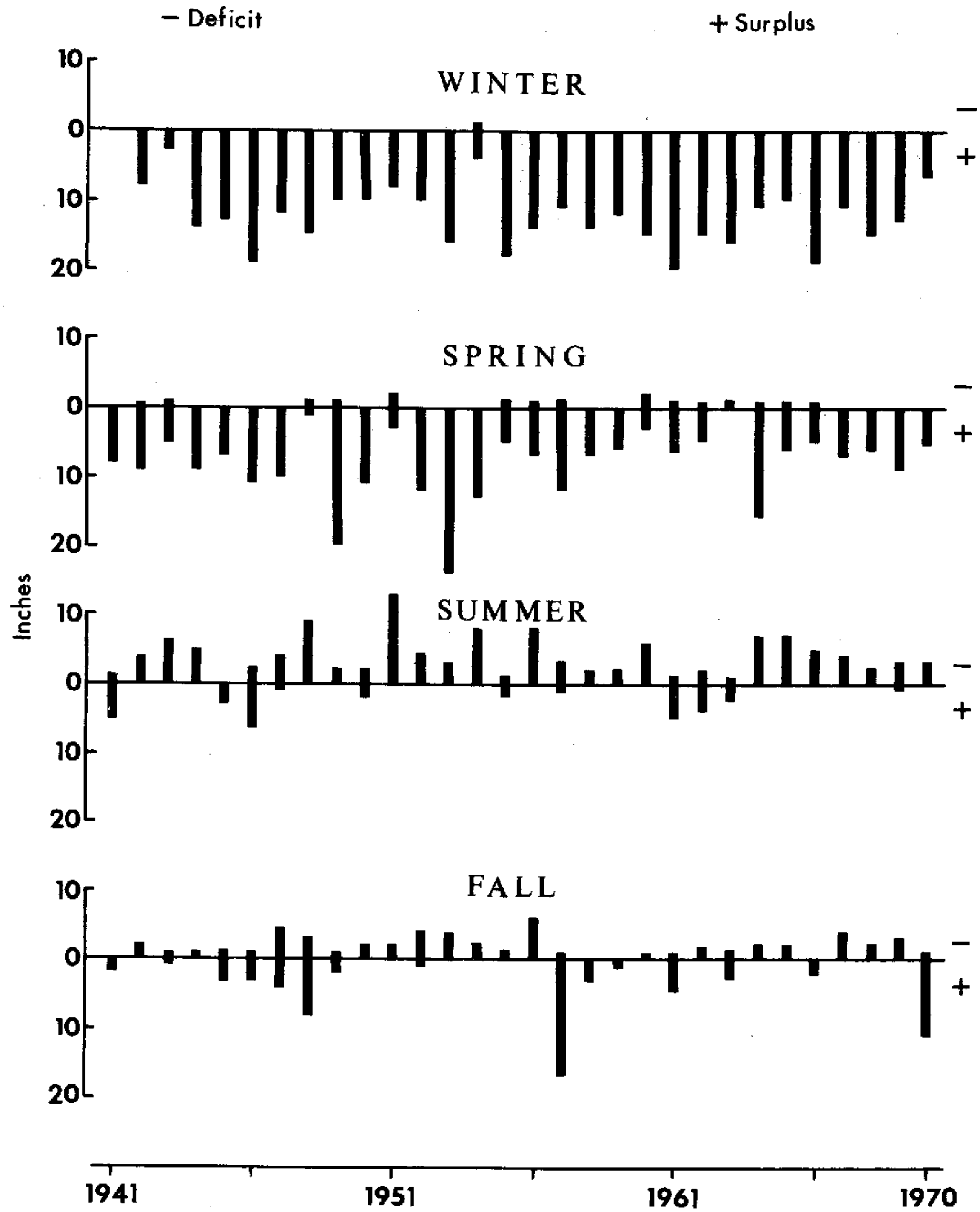


Figure 2.—Monthly water-budget surpluses and deficits in inches, by season. Recorded in the period 1941-70 at Elizabeth.

southern part of the parish, and people of Anglo-Saxon stock settled in the northern part.

Most of the early settlers were attracted to Allen Parish by the lumbering industry. By 1940, farming was the chief attraction. In 1950, the population was 18,752. In 1975, it was 20,197.

transportation

Roads in the parish are mostly hard surfaced federal, state, and parish highways. There are also a number of parish gravel roads. U.S. Highway 165 extends north-south through Oberlin and intersects east-west U.S. 190 in the southern part of the parish.

The parish is served by an east-west and north-south mainline of the Missouri Pacific Railroad and by an east-west branch line of the Santa Fe Railroad. An airport near the town of Oakdale serves small private and commercial aircraft.

water resources

By Darrel D. Carlson and Susan L. Marshall, U.S. Geological Survey, Baton Rouge, Louisiana.

The Calcasieu River, which flows southwestward across the central part of the parish, and its tributaries are the major sources of surface water in Allen Parish. The average annual discharge of the Calcasieu River is 826,700 acre-feet per year (1922-24, 1938-77) near Kinder (*8*). Whisky Chitto Creek, a major tributary of the Calcasieu, drains the western part of the parish and enters the Calcasieu west of Kinder. Its average annual discharge is 581,800 acre-feet per year (1939-77). Sixmile Creek and Tenmile Creek drain the northwestern part of the parish and are tributaries to Whisky Chitto Creek. The average annual discharge of Sixmile Creek near Sugartown is 117,400 acre-feet per year (1957-74); that of Tenmile Creek near Elizabeth is 89,770 acre-feet per year (1960-65). Numerous small tributaries to Bayou Nezpique are also sources of surface water in the parish. Water-quality data for the Calcasieu River near Oberlin show that the water is typically low in dissolved solids, moderate to high in dissolved oxygen, and relatively high in color.

There are three sources of fresh ground water—the Chicot, Evangeline, and Jasper aquifers.

The sand and gravel deposits of the Chicot aquifer contain freshwater throughout and range in thickness from about 100 feet in the northern part of Allen Parish to about 400 feet in the southern part. The base of the aquifer ranges in depth from about 150 feet in the northern part of the parish to about 500 feet in the southern part. Used primarily for irrigation and domestic purposes, wells in the Chicot aquifer generally are less than 300 feet deep. The water level is at a depth of 20 to 90 feet. Irrigation wells generally yield more than 1,000 gallons per minute. The water is hard and has a moderately high concentration of iron.

In the northern part of the parish, both the Evangeline and the Jasper aquifers contain freshwater. Freshwater occurs to a maximum depth of about 3,000 feet below sea level in the Jasper aquifer. In the southern part of the parish, the base of freshwater in the Evangeline aquifer is about 2,200 feet below sea level. The water in the Evangeline and Jasper aquifers is commonly soft and has a generally lower iron concentration than water in the Chicot aquifer.

how this survey was made

Soil scientists made this survey to learn what soils are in the survey area, where they are, and how they can be used. They observed the steepness, length, and shape of slopes; the size of streams and the general pattern of drainage; and the kinds of native plants or crops. They dug many holes to study soil profiles. A profile is the sequence of natural layers, or horizons, in a soil. It extends from the surface down into the parent material, which has been changed very little by leaching or by plant roots.

The soil scientists recorded the characteristics of the profiles they studied and compared those profiles with others in nearby counties and in more distant places. They classified and named the soils according to nationwide uniform procedures. They drew the boundaries of the soils on aerial photographs. These photographs show trees, buildings, fields, roads, and other details that help in drawing boundaries accurately. The soil maps at the back of this publication were prepared from aerial photographs.

The areas shown on a soil map are called map units. Most map units are made up of one kind of soil. Some are made up of two or more kinds. The map units in this survey area are described under "General soil map units" and "Detailed soil map units."

While a soil survey is in progress, samples of some soils are taken for laboratory measurements and for engineering tests. All soils are field tested to determine their characteristics. Interpretations of those characteristics may be modified during the survey. Data are assembled from other sources, such as test results, records, field experience, and state and local specialists. For example, data on crop yields under defined management are assembled from farm records and from field or plot experiments on the same kinds of soil.

But only part of a soil survey is done when the soils have been named, described, interpreted, and delineated on aerial photographs and when the laboratory data and other data have been assembled. The mass of detailed information then needs to be organized so that it can be used by farmers, woodland managers, engineers, planners, developers and builders, home buyers, and others.

general soil map units

The general soil map at the back of this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, a map unit consists of one or more major soils and some minor soils. It is named for the major soils. The soils making up one unit can occur in other units but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

The soils in the survey area vary widely in their potential for major land uses. Table 4 shows the extent of the map units shown on the general soil map. It lists the potential of each, in relation to that of the other map units, for major land uses and shows soil properties that limit use. Soil potential ratings are based on the practices commonly used in the survey area to overcome soil limitations. These ratings reflect the ease of overcoming the limitations. They also reflect the problems that will persist even if such practices are used.

Each map unit is rated for *cultivated crops, pastureland, woodland,* and *urban uses*. Cultivated crops are those grown extensively in the survey area. Pastureland refers to land that is producing either native grasses or tame grasses and legumes for livestock grazing. Woodland refers to areas of native or introduced trees. Urban uses include residential, commercial, and industrial developments.

The boundaries of map units in Allen Parish were matched, wherever possible, with those of the published survey of Evangeline Parish and the published survey of Rapides Parish. In a few places the lines do not join, and there are some differences in the names of the map units. These differences result mainly from changes in soil series concepts, differences in map unit design, and changes in soil patterns near survey area boundaries.

soil descriptions

soils of the wooded uplands; a loamy surface layer and a loamy subsoil

This group of map units consists of loamy soils of the uplands. Most of the acreage is woodland. Soybeans is the main crop in cultivated areas. The four map units of this group make up about 61 percent of the parish.

1. Malbis-Ruston

Very gently sloping to gently sloping, well drained and moderately well drained soils

This map unit is on the Coastal Plain Uplands. It is at the highest elevations in the parish. The landscape is one of very gently sloping ridges and side slopes.

This unit makes up about 5 percent of the parish. It is about 60 percent Malbis soils, 35 percent Ruston soils, and 5 percent soils of minor extent.

The moderately well drained Malbis soils occupy slightly lower parts of the landscape than the well drained Ruston soils. Both soils have a fine sandy loam surface layer. The Malbis soils have a brownish fine sandy loam and sandy clay loam subsoil, and the Ruston soils have a reddish sandy loam and sandy clay loam subsoil.

Of minor extent in this unit is the moderately well drained Beauregard soil on some lower side slopes.

This unit is mainly woodland. A small acreage is cropland and pastureland.

The potential is good for pasture and fair for crops. Soybeans, corn, and truck crops are suitable crops. Suitable for pasture are Pensacola bahiagrass, common bermudagrass, dallisgrass, and ryegrass. Low fertility and the erosion hazard are the main limitations for farming. Terracing, contour farming, and crop residue reduce erosion and improve soil fertility.

The potential for trees is good. Most areas support good stands of pine. There are few limitations.

The potential for urban use is good. Low strength is a limitation for local roads and streets but can be easily overcome by good design and construction.

2. Beauregard-Malbis

Very gently sloping to gently sloping, moderately well drained soils

This unit is on the Coastal Plain Uplands in the western part of the parish. The landscape is one of small hills, ridges, and side slopes that are dissected by many small drainageways.

This unit makes up about 9 percent of the parish. It is about 61 percent Beauregard soils, 25 percent Malbis soils, and 14 percent soils of minor extent.

Beauregard soils are on the lower side slopes along small drainageways and on very gently sloping broad ridgetops. Malbis soils are on convex ridgetops, small hills, and upper side slopes. Beauregard soils have a silt loam surface layer. Malbis soils have a fine sandy loam surface layer. Both soils have a brownish loamy subsoil.

Of minor extent in this unit are the well drained Ruston soils, the moderately well drained Cadeville and Messer soils, and the poorly drained Caddo soils. Cadeville and Ruston soils are on some of the steeper side slopes. Caddo and Messer soils are closely intermingled in broad, nearly level areas.

This unit is mainly woodland. A small acreage is cropland and pastureland.

The potential is fair for crops and good for pasture. Low fertility and the erosion hazard are the main limitations. Suitable crops are soybeans and corn. A surface drainage system is generally needed. Crop residue management improves fertility.

The potential is good for trees. Wetness somewhat limits the use of equipment. Most areas support good stands of pine. Beauregard soil also supports some hardwoods.

The potential for urban use is fair. Wetness is a limitation for use as septic tank absorption fields, sanitary landfills, and homesites. Low strength is a limitation for local roads and streets. These limitations can be overcome by a well designed drainage system or roadbed.

3. Glenmora-Caddo

Very gently sloping, moderately well drained soils and nearly level, poorly drained soils

This unit occurs throughout the parish. The landscape is one of broad, nearly level flats and very gently sloping ridges and side slopes along small drainageways.

This unit makes up about 23 percent of the parish. It is about 37 percent Glenmora soils, 32 percent Caddo soils, and 31 percent soils of minor extent.

Glenmora soils are more sloping and generally are on lower positions than Caddo soils. The very gently sloping Glenmora soils are moderately well drained, and the nearly level Caddo soils are poorly drained. Both soils have a silt loam surface layer. Glenmora soils have a brownish silty clay loam and silt loam subsoil. Caddo soils have a grayish silty clay loam subsoil.

Of minor extent are the moderately well drained Messer soils and the poorly drained Guyton soils. Messer soils, on low circular mounds, are intermingled with the nearly level Caddo soils. Guyton soils are in concave depressed areas at lower elevations.

This unit is mainly woodland. A small acreage is cropland and pastureland.

The potential for crops is fair. Suitable crops are soybeans, rice, and corn. Low fertility and wetness are the main limitations. Erosion is a problem in very gently sloping areas that are left without a vegetative cover. A surface drainage system is generally needed. Returning all crop residue reduces the risk of erosion.

The potential for pasture is fair. Wetness limits the use of equipment.

This unit has good potential for trees. Wetness somewhat limits the use of equipment. Both Caddo and Glenmora soils support good stands of pine. Caddo soils also support good stands of hardwoods.

The potential for urban use is poor because of wetness. Wetness is a limitation for septic tank absorption fields, sanitary landfills, and homesites. Low strength is a limitation for local roads and streets. Properly designed drainage systems and roadbeds will help to overcome these limitations.

4. Guyton-Caddo

Level and nearly level, poorly drained soils

The landscape of this map unit is one of broad flats on uplands and many concave depressed areas.

This unit makes up about 24 percent of the parish. It is about 62 percent Guyton soils, 15 percent Caddo soils, and 23 percent soils of minor extent.

Guyton soils are at slightly lower elevations than Caddo soils. Both soils are poorly drained, have a silt loam surface layer, and have a grayish, loamy subsoil. Some areas of Guyton soils are subject to flooding.

Of minor extent are the moderately well drained Glenmora and Messer soils. Glenmora soils are on side slopes along small drainageways. Messer soils, on low convex mounds, are closely intermingled with the nearly level Caddo soils.

This unit is mainly woodland. A small acreage is cropland and pastureland. Wetness is the main limitation for farming, urban use, woodland, and pastureland. A good surface drainage system is difficult to design because of the vast flatness and swampy nature of the area.

The potential for crops is poor. Suitable crops are rice and soybeans. Wetness is the main limitation. Some areas are subject to flooding. A surface drainage system generally is needed.

The potential is good for trees and fair for pasture. Wetness limits the use of equipment. This unit supports good stands of pine and hardwoods.

The potential for urban use is poor because of wetness. Some of the low depressed areas are subject to flooding.

soils of the prairie; a loamy surface layer and a clayey and loamy subsoil

This group of map units consists of soils that are loamy throughout and soils that have a loamy surface layer and a clayey subsoil. Most of the acreage is cropland and pastureland. Soybeans and rice are the main crops. The two map units of this group make up about 18 percent of the parish.

5. Frost-Crowley

Level and nearly level, poorly drained and somewhat poorly drained soils

This map unit is at the higher elevations of the Coastal Prairie in the southern and southeastern parts of the parish. The landscape is one of level to nearly level, broad flats that are dissected by numerous small drainageways.

This unit makes up about 12 percent of the parish. It is about 50 percent Frost soils, 31 percent Crowley soils, and 19 percent soils of minor extent.

Frost soils are at slightly lower elevations than Crowley soils. Frost soils are poorly drained, and Crowley soils are somewhat poorly drained. Both soils have a silt loam surface layer. Frost soils have a grayish loamy subsoil. Crowley soils have a grayish clayey subsoil. Some areas of Frost soils are subject to flooding.

Of minor extent are the poorly drained Kinder soils, the somewhat pocrly drained Mamou soils, and the somewhat poorly drained Vidrine soils. Kinder soils are on the slightly lower level and nearly level flats. The better drained Mamou soils are on natural levees along abandoned stream channels. Vidrine soils are on low mounds intermingled with Crowley soils on broad flats.

This unit is mainly cropland and pastureland. A small acreage is woodland.

The potential for crops and pasture is fair. This unit is well suited to rice and moderately well suited to soybeans. Wetness is the main limitation. A surface drainage system is needed for row crops. Land smoothing and uniform application of water increase the efficiency of flood irrigation and improve drainage where rice is grown.

The potential for trees is good. Wetness in winter and spring limits the use of equipment.

The potential for urban use is poor because of wetness and high shrink-swell potential. These limitations can be overcome by good design. Some areas near small drainageways are occasionally flooded.

6. Kinder-Glenmora

Nearly level, poorly drained soils and very gently sloping, moderately well drained soils

This map unit is on the Coastal Prairie Terrace in the southern part of the parish. The landscape is one of broad, nearly level flats and very gently sloping ridges and side slopes along the Calcasieu River, Bayou Blue, Bayou Nezpique, and their tributaries.

This unit makes up about 6 percent of the parish. It is about 61 percent Kinder soils, 25 percent Glenmora soils, and 14 percent soils of minor extent.

Kinder soils generally are at slightly lower elevations than Glenmora soils, except where the Glenmora soils are on the side slopes of drainageways. Kinder soils are poorly drained and Glenmora soils are moderately well drained. Both soils have a silt loam surface layer. Kinder soils have a grayish silty clay loam subsoil. Glenmora soils have a brownish silt loam and silty clay loam subsoil.

Of minor extent are the moderately well drained Messer soils, the somewhat poorly drained Crowley soils, and the poorly drained Frost, Guyton, and Wrightsville soils. Messer soils are on low mounds intermingled with Kinder soils on the nearly level, broad flats. Crowley soils occur on slightly higher broad flats. Frost, Guyton, and Wrightsville soils are on slightly lower flats and along drainageways.

This unit is mainly cropland and woodland. Some areas are pasture. Wetness is the main limitation for farming. The level to nearly level areas are suitable for cropland, but erosion is a problem in the very gently sloping areas along drainageways. Wetness also is a limitation for urban and woodland use.

The potential for crops is fair. The long, level to nearly level slopes are suited to either soybeans or rice. Wetness is the main limitation. A good surface drainage system is needed for row crops. Land smoothing and uniform application of water increase the efficiency of flood irrigation and improve drainage. The included low mounds need to be smoothed. Maintaining crop residue reduces erosion.

The potential for pastureland is fair. Wetness limits the use of equipment.

The potential is good for trees. Wetness somewhat limits the use of equipment. Both Kinder and Glenmora soils support good stands of pine.

The potential for urban use is poor because of wetness. Wetness is a limitation for septic tank absorption fields and sanitary landfills. Low strength is a limitation for local roads and streets. A well designed drainage system and roadbed help to overcome these limitations.

soils on stream terraces; a loamy and sandy surface layer and a loamy and sandy subsoil

This group consists of loamy and sandy soils on stream terraces along major streams in the western part of the parish. Most of the acreage is woodland. Soybeans and corn are the main crops in cultivated areas. Only one map unit is in this group. It makes up about 8 percent of the parish.

7. Cahaba-Bienville

Very gently sloping to gently sloping, well drained and somewhat excessively drained soils

This map unit is at low elevations on stream terraces along the Calcasieu River and Whiskey Chitto Creek and their tributaries. The landscape is one of very gently sloping and gently sloping ridges between low depressed areas.

This unit makes up about 8 percent of the parish. It is about 40 percent Cahaba soils, 35 percent Bienville soils, and 25 percent soils of minor extent.

Cahaba soils are in depressional areas between low ridges, and Bienville soils are on the ridges. Cahaba soils are well drained, and Bienville soils are somewhat excessively drained. Cahaba soils have a loamy surface layer and a reddish loamy subsoil. Bienville soils have a sandy surface layer and a brownish sandy subsoil.

Of minor extent is the poorly drained Guyton soil. It is in the lower lying concave areas, alluvial plains, and abandoned stream channels.

This map unit is mainly woodland. A small acreage is cropland and pastureland. Suitable crops are corn, soybeans, and home garden crops. This unit has good tilth, good internal drainage, and good surface drainage, but the undulating surface features restrict large scale farming. Other uses such as urban use, pastureland, and woodland are desirable if certain limitations are overcome. The main limitations are runoff, droughtiness, seepage from sewage lagoons, and low fertility.

The potential for crops is fair. The good surface drainage and good internal drainage are favorable properties for use of this unit as cropland, but most plants are damaged by lack of water during extended dry periods. Suitable crops are corn, soybeans, and garden crops. Planting row crops in the proper direction and managing crop residue reduce the risk of erosion.

The potential for pastureland is good, but pasture grasses are sometimes damaged by lack of water during extended dry periods.

The potential for trees is good. The sandy surface layer somewhat limits traction of equipment. The Texas leafcutting ant is a problem in some sandy areas.

The potential for urban use is good. This unit is one of the choice units for urban use because of good surface drainage and internal drainage.

soils of the flood plains; a loamy surface layer and a loamy subsoil

This group consists of loamy soils of the flood plains throughout the parish. It is frequently flooded by runoff from the uplands. Most of the acreage is hardwood woodland. A small acreage is pastureland. The one map unit in this group makes up about 13 percent of the parish.

8. Guyton-Cascilla

Level and nearly level, poorly drained and well drained soils

This map unit is at the lowest elevations in the parish. It is on the flood plains of drainageways such as the Calcasieu River and Whiskey Chitto Creek and their tributaries.

This unit makes up about 13 percent of the parish. It is about 51 percent Guyton soils, 27 percent Cascilla soils, and 22 percent soils of minor extent.

Guyton soils occupy lower elevations than Cascilla soils. Guyton soils are poorly drained. Cascilla soils are well drained and are on the higher lying natural levees. Both soils have a silt loam surface layer. Cascilla soils have a brownish silt loam subsoil, and Guyton soils have a grayish silt loam and silty clay loam subsoil.

Of minor extent are the higher lying, well drained Cahaba soils and the somewhat excessively drained Bienville soils.

This unit is mainly woodland. A small acreage is pastureland. The potential for most uses is poor or very poor because of flooding and wetness.

The potential for crops and pasture is poor because of severe flooding. The potential is good for trees, but flooding and wetness restrict the use of equipment and make seedling mortality somewhat high.

The potential is poor for urban use because of flooding and wetness.

broad land use considerations

The map units in the parish vary widely in their potential for major land uses, as indicated in table 4. Favorable and unfavorable soil properties are also indicated. The ratings of soil potential reflect the relative cost of practices needed to overcome soil limitations and the hazard of continued soil-related problems after such practices are installed. The ratings do not consider distance to existing transportation systems or other facilities.

Land uses considered in table 4 are cultivated crops, urban uses, woodland, and pasture.

In 1975, 90 percent of the total land area was used for agriculture or woodland production. All the map units on the general soil map have fair potential for cultivated farm crops, except the Guyton-Caddo and Guyton-Cascilla map units, which have poor potential.

According to the 1976 annual report of the Louisiana Cooperative Extension Service, 346,500 acres in the parish was woodland. All the map units have good potential for woodland except the Guyton-Caddo and the Guyton-Cascilla, which have fair potential because of flooding, wetness, and equipment limitation.

The Malbis-Ruston and Cahaba-Bienville map units have good potential for urban uses. These units are considered to be the choice land in the parish for most urban uses. They have good drainage, are at high elevations, and are not subject to flooding. The Beauregard-Malbis map unit has fair potential for urban uses mainly because of wetness. Glenmora-Caddo, Guyton-Caddo, Guyton-Cascilla, Frost-Crowley, and Kinder-Glenmora map units have poor potential because of wetness and low load-supporting capacities. The

Guyton-Cascilla and Guyton-Caddo map units are also subject to flooding.

The Malbis-Ruston, Beauregard-Malbis, and Cahaba-Bienville map units have good potential for pastureland. The Glenmora-Caddo, Guyton-Caddo, Frost-Crowley, and Kinder-Glenmora have fair potential because of wetness and low fertility. The Guyton-Cascilla map unit has poor potential for pastureland because of wetness and flooding.

The map units in the parish vary in their suitability for various land uses. Soil information can be used as a guide in planning orderly growth and development. It is especially helpful in determining which lands to allocate to each use.

detailed soil map units

The map units on the detailed soil maps at the back of this survey represent the soils in the survey area. The map unit descriptions in this section, along with the soil maps, can be used to determine the suitability and potential of a soil for specific uses. They also can be used to plan the management needed for those uses. More information on each map unit, or soil, is given under "Use and management of the soils."

Each map unit on the detailed soil maps represents an area on the landscape and consists of one or more soils for which the unit is named.

A symbol identifying the soil precedes the map unit name in the soil descriptions. Each description includes general facts about the soil, a brief description of the soil profile, and a listing of the principal hazards and limitations to be considered in planning management.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer or of the underlying material, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer or of the underlying material. They also can differ in slope, stoniness, salinity, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Guyton silt loam, ponded, is one of several phases in the Guyton series.

Some map units are made up of two or more major soils. These map units are called soil complexes or undifferentiated groups.

A *soil complex* consists of two or more soils in such an intricate pattern or in such small areas that they cannot be shown separately on the soil maps. The pattern and proportion of the soils are somewhat similar in all areas. Caddo-Messer complex is an example.

An *undifferentiated group* is made up of two or more soils that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils in a mapped area are not uniform. An area can be made up of only one of the major soils, or it can be made up of all of them. Basile and Guyton soils, frequently flooded, and Guyton and Cascilla soils, frequently flooded, are the only undifferentiated groups in this survey area. In these map units, flooding is the overriding limitation for present and expected uses of the soils. Therefore, individual soils were not separated.

Most map units include small scattered areas of soils other than those for which the map unit is named. Some of these included soils have properties that differ substantially from those of the major soil or soils. Such differences could significantly affect use and management of the soils in the map unit. The included soils are identified in each map unit description. Some small areas of strongly contrasting soils are identified by a special symbol on the soil maps.

The boundaries of map units in Allen Parish were matched, wherever possible, with those of the published survey of Evangeline Parish and the completed but unpublished survey of Rapides Parish. In a few places the lines do not join, and there are some differences in the names of the map units. These differences result mainly from changes in soil series concepts, differences in map unit design, and changes in soil patterns near survey area boundaries.

On the detailed soil maps all of the soil areas in Allen Parish are mapped at the same level of detail, except for those areas that are frequently flooded. Frequent flooding so limits the use and management of soils that separating each kind of soil in these areas would be of little value to the land user. Therefore, where flooding is the overriding limitation for present and expected land uses, individual soils are not mapped separately.

Table 5 gives the acreage and proportionate extent of each map unit. Other tables (see "Summary of tables") give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils.

soil descriptions

Ac—Acadia silt loam. This nearly level and very gently sloping loamy soil formed in clayey alluvium. Individual areas range from 40 to 350 acres. The slope range is 0 to 2 percent.

Typically the surface layer is medium acid, dark grayish brown silt loam about 4 inches thick. The subsurface layer, to a depth of 7 inches, is strongly acid, light yellowish brown silt loam. The subsoil to a depth of 14 inches is strongly acid, yellowish brown silty clay loam mottled with light brownish gray. To 58 inches it is very strongly acid, light brownish gray silty clay mottled with shades of red and brown. The underlying material to a depth of 68 inches is strongly acid, light gray silty clay mottled with shades of brown and red.

This soil is low in fertility. Water and air move very slowly through the soil. Water runs off the surface at a slow rate. The upper part of the subsoil is wet for much of the time in winter and spring. The water table is at a depth of 0.5 foot to 1.5 feet from December through April. Crops are sometimes damaged by lack of water during dry periods in summer and fall.

Included in mapping are a few small areas of Gore and Wrightsville soils. Gore soils are on convex ridges and side slopes and are better drained than Acadia soil. The poorly drained Wrightsville soils are on lower parts of the landscape.

Most of the acreage is in mixed pine and hardwood woodland. A few areas are in crops.

The potential for most urban use is poor. Slow permeability and wetness are limitations for use as septic tank absorption fields. High shrink-swell is a limitation for foundations or for use as construction material. Low strength is a limitation for local roads and streets.

The potential for woodland is good. Wetness somewhat limits the use of equipment.

The potential is fair for crops and pasture. Low fertility and wetness are the main limitations. Suitable crops are soybeans, rice, and corn. Suitable for pasture are Pensacola bahiagrass, common bermudagrass, dallisgrass, ryegrass, southern wild winter peas, and wheat.

Good tilth is easy to maintain on this soil. Contour farming reduces erosion and helps to remove excess surface water. Returning crop residue to the soil improves tilth. Most crops respond well to fertilizer. Generally lime is also needed.

The capability subclass is IIIw. The woodland group is 2w8.

BB—Basile and Guyton soils, frequently flooded. These level soils formed in loamy alluvium on the flood plains of narrow drainageways. They are subject to frequent flooding. Basile and Guyton soils are in an irregular pattern on the landscape. Most mapped areas contain both soils, but some areas contain only one. In mapped areas that contain both soils, Basile soil is in the lower positions, such as abandoned stream channels, and Guyton soil is in slightly higher positions. Slopes are less than 1 percent.

About 50 percent of most mapped areas is Basile soil. Typically the surface layer is very strongly acid, gray silt loam about 3 inches thick. The subsurface layer, to a depth of 19 inches, is very strongly acid, grayish brown silt loam. The subsoil to 27 inches is strongly acid, grayish brown silty clay loam. To 63 inches it is moderately alkaline, light brownish gray silty clay loam; the lower part contains many concretions of lime. To a depth of 80 inches the subsoil is moderately alkaline, light brownish gray silt loam.

About 30 percent of most mapped areas is Guyton soil. Typically the surface layer is strongly acid, dark grayish brown silt loam about 2 inches thick. The subsurface layer, to a depth of about 31 inches, is very strongly acid, gray silt loam. The subsoil to 48 inches is very strongly acid, grayish brown silty clay loam mottled with strong brown. To 80 inches, it is very strongly acid, light brownish gray silty clay loam.

Basile and Guyton soils are low in fertility. Wetness restricts the movement of air and water and restricts root growth of many plants. Water runs off the surface at a slow rate. These soils are flooded frequently. Floodwaters are 1 to 8 feet deep for periods up to 10 days, mostly in winter and spring. The water table is at the surface or within 1.5 feet of the surface from December through April. The surface layer of Guyton soil is wet for long periods in winter and spring.

Included in mapping are small areas of Frost and Wrightsville soils and soils that have an alkaline surface layer but are otherwise similar to Basile soil.

Most of the acreage is hardwood woodland (fig. 3). The potential for trees is fair. Flooding and wetness cause high seedling mortality and restrict the use of equipment.

The potential for urban use is poor. Flooding and wetness are severe limitations.

The potential for crops and pasture is poor because of flooding and wetness. The flooding is generally too severe for crops. Suitable pasture plants are Pensacola bahiagrass and common bermudagrass. Nitrogen and phosphate fertilizer promote good growth of forage plants.

The capability subclass is Vw. The woodland group is 4w9 for Basile soil and 2w9 for Guyton soil.

Be—Beauregard silt loam, 1 to 3 percent slopes. This very gently sloping loamy soil formed in loamy alluvium on upland terraces. Individual areas range from 30 to 500 acres.

Typically the surface layer is medium acid, dark grayish brown silt loam about 4 inches thick. The subsurface layer, to a depth of about 7 inches, is strongly acid, pale brown silt loam. The subsoil to 14 inches is strongly acid, yellowish brown silt loam mottled with pale brown. To about 25 inches it is strongly acid, yellowish brown silty clay loam mottled with shades of gray and brown. To about 45 inches it is very strongly acid, light brownish gray and yellowish brown silty clay loam mottled with red. To about 65 inches it is very strongly acid, light brownish gray silty clay loam mottled with yellowish brown and red.

This soil is low in fertility. Water and air move slowly through the soil. Water runs off the surface at a medium

Figure 3.—Hardwoods and palmettos on Basile and Guyton soils, frequently flooded.

rate. The upper part of the subsoil is wet for much of the time in winter and spring. The water table is at a depth of 1.5 feet to 3 feet from December through March. Crops are sometimes damaged by lack of water during dry periods in summer and fall.

Included in mapping are a few small areas of Caddo, Malbis, and Messer soils. The poorly drained Caddo soils are in depressions. Malbis soils are on more sloping parts of the landscape and contain more sand in the subsoil. Messer soils are on small, convex mounds and contain less clay.

Most of the acreage is pine woodland. A few areas are cropland and pastureland. The potential for trees is good. Wetness somewhat limits the use of equipment.

The potential for urban use is fair. Wetness is the principal limitation for septic tank absorption fields, sanitary landfills, and homesites. Low strength is a limitation for local roads and streets.

The potential for crops is fair. Erosion is a hazard. Wetness and low fertility are minor problems. Suitable crops are soybeans, rice, and corn. The potential for pasture is good. Suitable for pasture are Pensacola bahiagrass, common bermudagrass, dallisgrass, southern wild winter peas, and ryegrass.

Good tilth is easy to maintain on this soil. Contour farming or farming across the slopes reduces erosion. Crop residue management helps maintain tilth and reduce erosion. Most crops other than legumes respond well to nitrogen fertilizer. Lime and other fertilizers are generally needed.

The capability subclass is IIe. The woodland group is 2w8.

Bn—Bienville loamy fine sand, 1 to 5 percent slopes. This very gently sloping and gently sloping sandy soil formed in sandy alluvium on narrow ridges on stream terraces. Individual areas are 15 to 80 acres.

Typically the surface layer is medium acid, brown loamy fine sand about 7 inches thick. The subsurface layer, to a depth of about 20 inches, is medium acid, dark yellowish brown loamy fine sand. The next layer, to about 37 inches, is medium acid, strong brown loamy fine sand. The subsoil, to a depth of about 72 inches, is medium acid, strong brown loamy fine sand mottled with shades of brown in the lower part.

The soil is low in fertility. Water and air move through the soil at a moderately rapid rate. Roots penetrate easily. Crops are damaged by lack of water during dry periods in summer and fall. The water table is at a depth of 4 to 6 feet in December through April.

Included with this soil in mapping are a few small areas of Cahaba and Guyton soils. Cahaba soils are on some of the ridges and contain more clay. The poorly drained Guyton soils are in drainageways.

Most of the acreage is mixed hardwood and pine woodland. A few areas are pastureland and cropland.

The potential for trees is good. Traction of equipment is poor when the soil is dry. Seedling mortality is a problem because of droughtiness and the damage caused by the Texas cutting ant, which is especially well adapted to this soil (fig. 4).

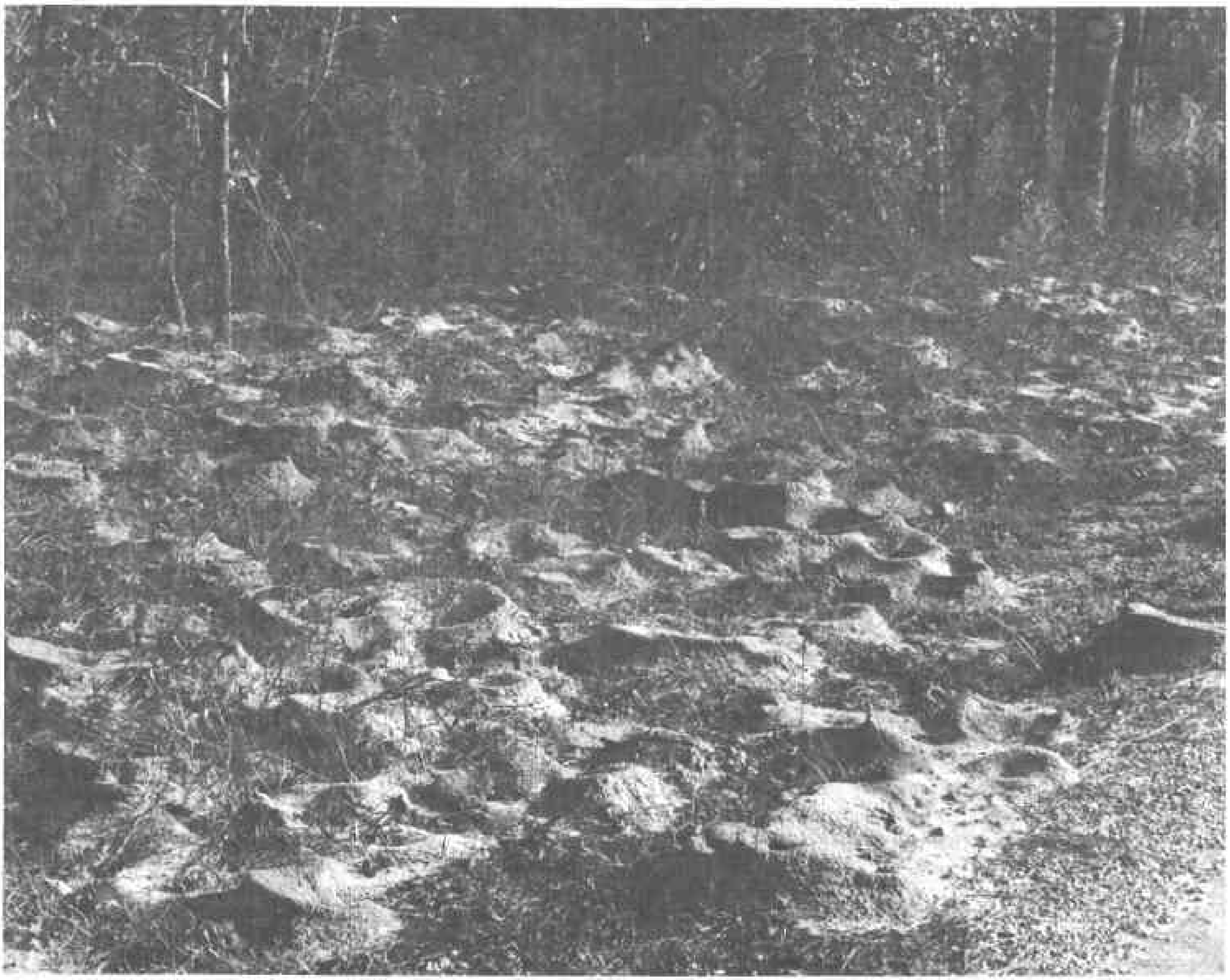


Figure 4.—Texas leafcutting ant colony. The soil is Bienville loamy fine sand, 1 to 5 percent slopes.

The potential for most urban uses is good. Excessive seepage is a problem for sanitary landfills or sewage lagoons. Cut banks of shallow excavations are subject to caving. In some areas sand is removed for use as construction material (fig. 5).

The potential for crops is fair. Droughtiness is a limitation, but truck and garden crops are successfully grown in some areas. The sandy surface layer is easy to work when it is moist, but traction is poor when it is dry. This soil is low in fertility. Erosion is a problem on cropland. Contour farming and crop residue management improve tilth and reduce erosion.

The potential for pasture is fair. Stands of grasses and legumes are difficult to establish because of droughtiness. Suitable for pasture are common bermudagrass, improved bermudagrass, crimson clover, and Pensacola bahiagrass. Most crops and pasture plants respond well to fertilizer. Generally lime is also needed.

The capability subclass is IIs. The woodland group is 2s2.

Cd—Caddo-Messer complex. This complex consists of small areas of Caddo and Messer soils that are so intermingled that they cannot be separated at the scale selected for mapping. These soils formed in loamy alluvium. Individual areas range from 40 to 400 acres. The landscape is one of flats and low mounds that are

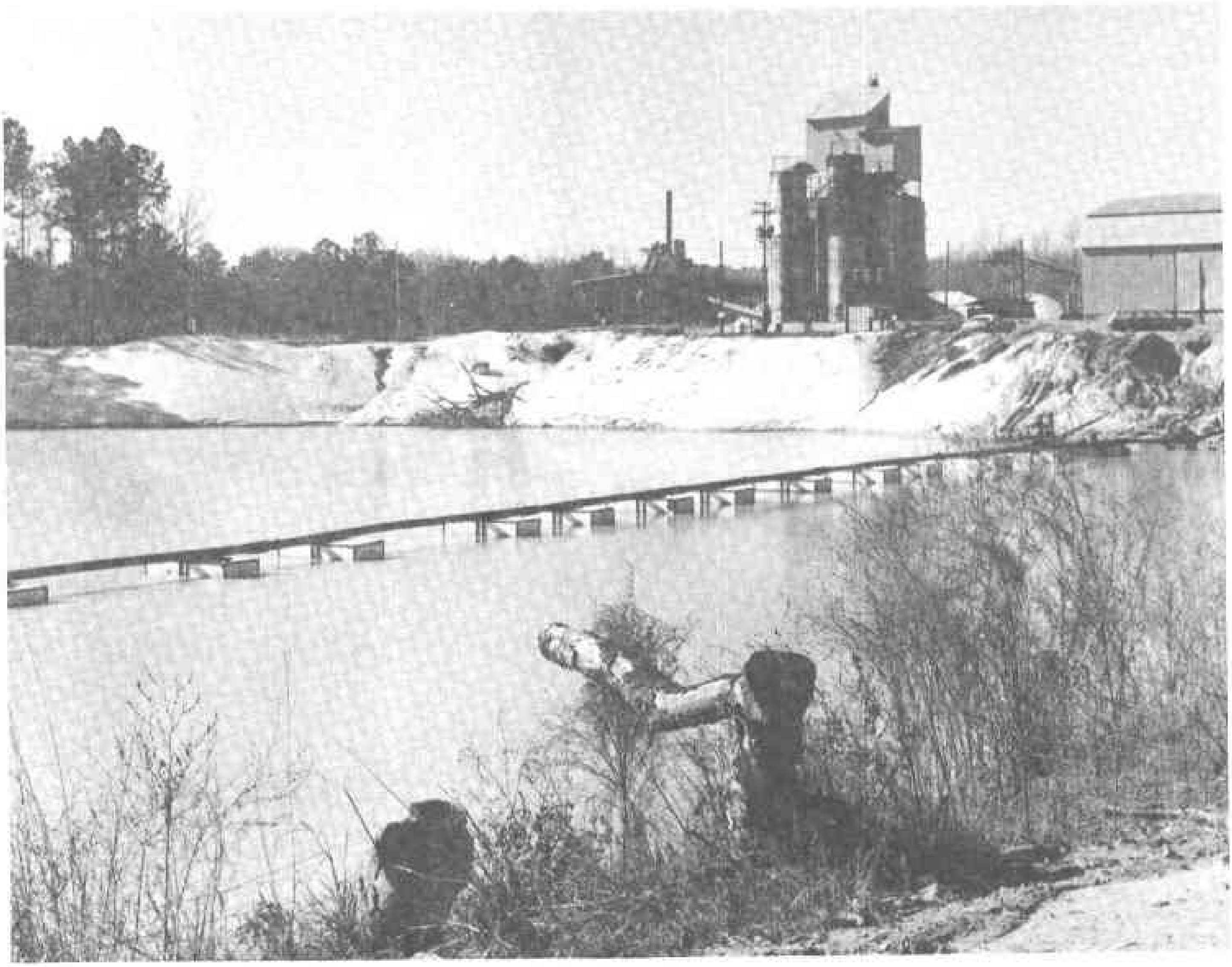


Figure 5.—Sand pit in Bienville loamy fine sand, 1 to 5 percent slopes.

30 to 50 feet wide and 1 to 4 feet high. Messer soil is on the mounds, and Caddo soil is on the flats. Slopes range from about 1 percent on the flats to about 5 percent on the mounds.

Caddo soil, on the flats, makes up about 60 percent of each mapped area. Typically the surface layer is very strongly acid, grayish brown silt loam about 4 inches thick. The subsurface layer, to a depth of 21 inches, is very strongly acid, light brownish gray silt loam mottled with yellowish brown. The subsoil to 38 inches is very strongly acid, light brownish gray silty clay loam mottled with yellowish brown and red. To about 61 inches it is strongly acid, light brownish gray silty clay loam mottled in shades of brown.

Caddo soil is low in fertility. Water and air move slowly through the soil, but crop roots can penetrate easily. This soil is slow to dry in spring. Sometimes, however, crops are damaged by lack of water during dry periods in summer and fall. The water table is at the surface or within 2 feet of the surface in December through April. Water stands in depressions and in the lower parts of the landscape for short periods after rains.

Messer soil, on the low mounds, makes up about 35 percent of each mapped area. Typically the surface layer is medium acid, dark grayish brown silt loam about 3 inches thick. The subsurface layer is strongly acid, brown silt loam to a depth of about 7 inches and very strongly acid, yellowish brown silt loam to 13 inches. The subsoil to 32 inches is very strongly acid, light yellowish brown silt loam. To 40 inches it is very strongly acid, pale brown silty clay loam mottled with red and yellowish brown. To 65 inches it is very strongly acid, yellowish brown silty clay loam mottled with yellowish red.

Messer soil is low in fertility. Water and air move slowly through the soil, but roots can penetrate easily. This soil is wet for long periods after rains. In some years, crops are damaged by lack of water during dry periods in summer and fall. The water table is perched above the subsoil for short periods in December through March.

Included in mapping are a few small areas of Glenmora soils on the mounds and Guyton soils on the flats. Glenmora soils contain less sand than the Messer soils. Guyton soils do not have prominent red mottles; Caddo soils have red mottles.

Most of the acreage is pine woodland (fig. 6). Some areas are pastureland, cropland, and homesites.

The potential for urban use is poor, mainly because of wetness. Drainage is needed in areas where outlets are available.

The potential for trees is good. Wetness somewhat limits the use of equipment.

The potential for crops and pasture is fair. Wetness is the main limitation. The mounds interfere with cultivation. Suitable crops are rice, corn, and soybeans. Suitable for pasture are common bermudagrass, Pensacola bahiagrass, ryegrass, and southern wild winter peas (fig. 7).

These soils are easy to work and to keep in good tilth, but a surface crust is likely to form in areas that are clean tilled.

Crop residue management improves tilth, helps to maintain the content of organic matter, and reduces erosion. Planting rice in water generally overcomes the problem of crusting. Land smoothing and leveling increase the efficiency of irrigation and improve drainage (fig. 8). Planting row crops in the proper direction improves drainage. Most crops respond well to fertilizer and lime.

The capability subclass is IIIw. The woodland group is 2w9 for Caddo soil and 2w8 for Messer soil.

Cf—Cadeville very fine sandy loam, 1 to 5 percent slopes. This very gently sloping to gently sloping soil has a loamy surface layer. It formed in clayey alluvium on side slopes in the uplands. Individual areas are 20 to 100 acres.

Typically, the surface layer is strongly acid, dark brown very fine sandy loam about 2 inches thick. The subsurface layer, to a depth of 5 inches, is strongly acid, brown very fine sandy loam. The subsoil to 27 inches is very strongly acid, yellowish red silty clay mottled in shades of red, brown, and gray. To 39 inches it is very strongly acid silty clay mottled in shades of brown, gray, and red. To 45 inches it is very strongly acid, brown silty clay loam. The underlying material to a depth of about 65 inches is strongly acid, light brownish gray and yellowish brown silty clay loam.

This soil is low in natural fertility. The clayey subsoil restricts roots. Water and air move very slowly through the soil. Water runs off the surface at a medium rate. The water table is at a depth of more than 6 feet. Crops are generally damaged by lack of water during dry periods in summer and fall.

Included in mapping are a few small areas of Beauregard and Malbis soils. These soils, on the higher parts of the landscape, contain less clay in the subsoil than the Cadeville soil.

Most of the acreage is pine woodland. A few areas are pastureland.

The potential for urban use is poor. High shrink-swell potential is the main limitation. Low strength is a limitation for local roads and streets. Very slow permeability is a limitation for septic tank absorption fields.

The potential for trees is fair. Poor trafficability somewhat limits the use of equipment.

The potential for crops and pasture is poor. The erosion hazard severely limits the use of this soil for cultivated crops. A suitable crop is soybeans. Suitable for pasture are common bermudagrass, Pensacola bahiagrass, dallisgrass, crimson clover, and ryegrass. Terracing and stripcropping are needed to help reduce erosion. Crop residue management improves tilth, helps to maintain organic matter content, and reduces erosion.

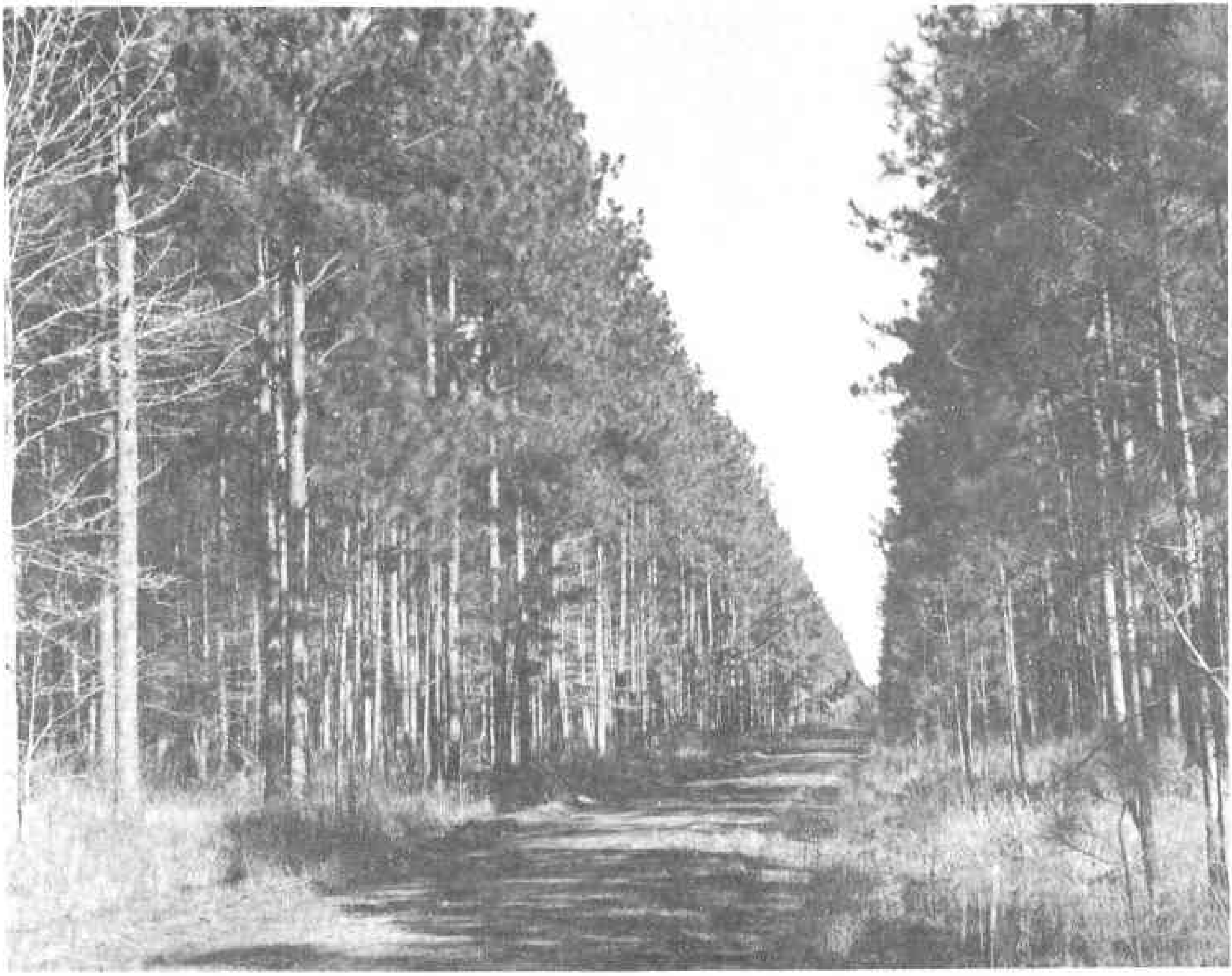


Figure 6.—Planted stand of slash pine on Caddo-Messer complex.

Most crops, except legumes, respond well to additions of fertilizer. Generally lime is needed.

The capability subclass is IVe. The woodland group is 3c2.

Ch—Cahaba fine sandy loam, 1 to 3 percent slopes. This very gently sloping loamy soil formed in loamy alluvium on the higher parts of stream terraces mainly along the Calcasieu River and Whiskey Chitto Creek and their tributaries. Individual areas range from 20 to 200 acres.

Typically the surface layer is strongly acid, dark grayish brown fine sandy loam about 5 inches thick. The subsurface layer, to a depth of about 10 inches, is strongly acid, pale brown and yellowish red fine sandy loam. The subsoil to 20 inches is very strongly acid, yellowish red clay loam. To 40 inches it is very strongly acid, yellowish red sandy clay loam. To 48 inches it is very strongly acid, yellowish red fine sandy loam. The underlying material to a depth of about 65 inches is very strongly acid, stratified yellowish red and very pale brown loamy sand and fine sandy loam.

This soil is low in fertility. Water and air move at a moderate rate through the soil. Water runs off the surface at a medium rate. Roots penetrate the soil easily. In some years, crops are damaged by lack of water during dry periods in summer and fall. The water table is at a depth of more than 6 feet.

Figure 7.—Native pasture in an area of Caddo-Messer complex.

Included in mapping are a few small areas of Bienville and Guyton soils. Bienville soils are on slightly higher lying ridges and contain more sand. The poorly drained Guyton soils are in swales and depressions.

Most of the acreage is mixed pine and hardwood woodland. A few areas are cropland, pastureland, and homesites.

The potential for most urban uses is good. The drainage properties of this soil are favorable for most urban uses.

The potential for trees is good. There are no major limitations.

The potential for crops is good. Low fertility is a minor limitation, and erosion is a problem if the soil does not have a vegetative cover. Suitable crops are corn, soybeans, and truck and garden crops. This is one of the best soils in the parish for truck and garden crops. The potential for pasture is good. Suitable for pasture are common bermudagrass, improved bermudagrass, Pensacola bahiagrass, crimson clover, and ryegrass.

Good tilth is easy to maintain. Farming on the contour, stripcropping, and terracing reduce erosion. Crop residue management improves tilth, helps to maintain organic matter content, and reduces erosion. Most crops and pasture plants respond well to fertilizer. Generally lime is needed.

The capability subclass is IIe. The woodland group is 2o7.

Ck—Cahaba-Bienville-Guyton complex, gently undulating. This complex consists of small areas of Cahaba, Bienville, and Guyton soils that are so intermingled that they cannot be separated at the scale selected for mapping. These loamy and sandy soils occupy ridges and swales on stream terraces mainly along the Calcasieu River and Whiskey Chitto Creek and their tributaries. They formed in loamy and sandy alluvium. Individual areas are 40 to 300 acres. Slope range is 0 to 3 percent.

Cahaba soil is mainly on lower ridges. It makes up about 34 percent of each mapped area. Typically the surface layer is medium acid, dark grayish brown fine sandy loam about 10 inches thick. The subsurface layer,

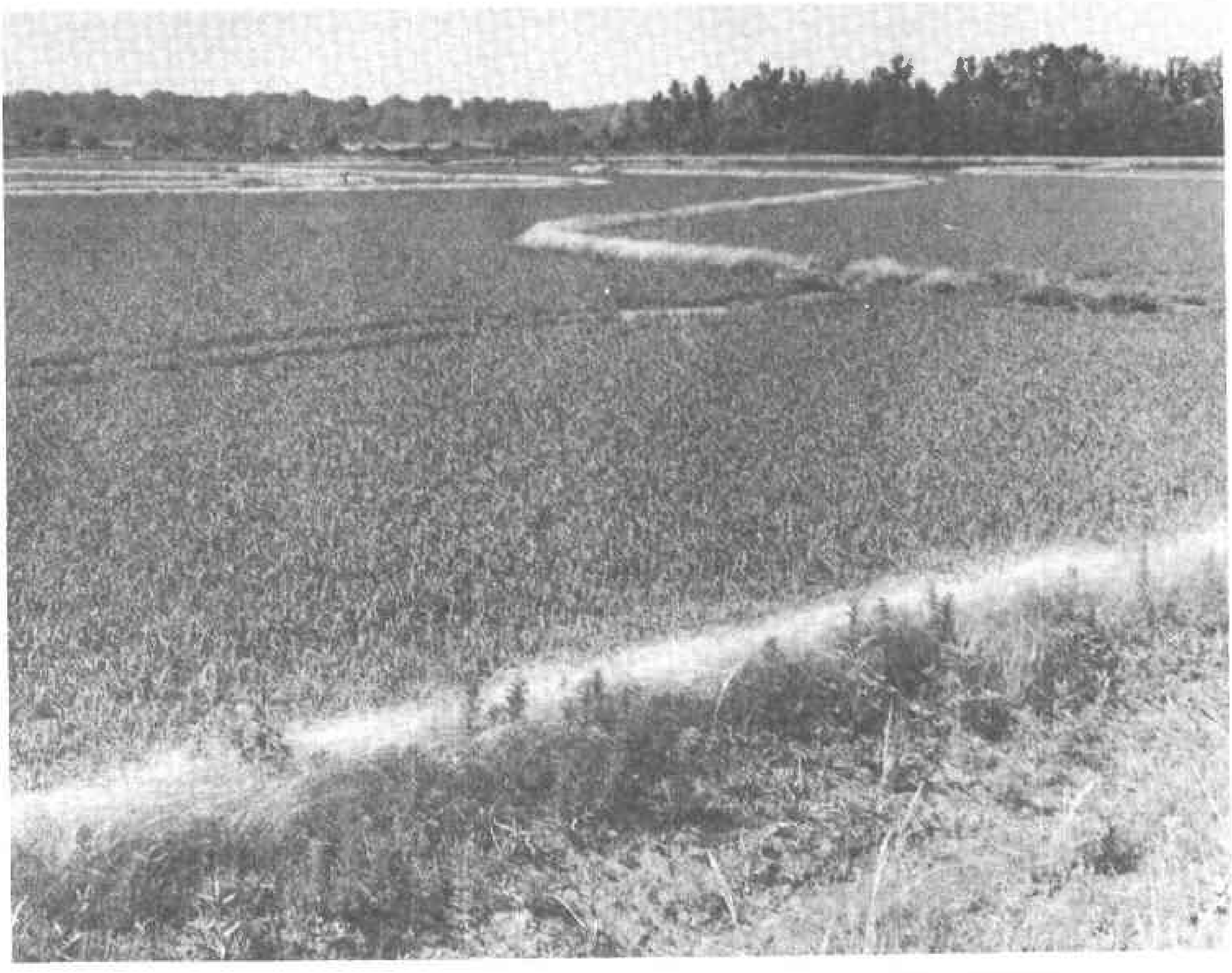


Figure 8.—Rice on Caddo-Messer complex. This field was leveled to increase the efficiency of irrigation.

to a depth of about 16 inches, is strongly acid, brown fine sandy loam. The subsoil, to 50 inches, is very strongly acid, yellowish red sandy clay loam. The underlying material to 72 inches is very strongly acid, yellowish brown fine sandy loam.

The soil is low in fertility. Water and air move at a moderate rate through the soil. Surface runoff is medium. Roots penetrate easily. Sometimes crops are damaged by lack of water during dry periods in summer and fall. The water table is below 6 feet.

Bienville soil is mainly on the higher ridges. It makes up about 29 percent of each mapped area. Typically the surface layer is medium acid, dark grayish brown loamy fine sand about 7 inches thick. The subsurface layer, to a depth of about 18 inches, is strongly acid, yellowish brown loamy fine sand. The subsoil to 44 inches is strongly acid, yellowish red loamy fine sand mottled with shades of brown. To 54 inches it is medium acid, reddish brown loamy fine sand. To 64 inches it is medium acid reddish brown fine sandy loam. The underlying material to a depth of about 82 inches is medium acid, stratified light yellowish brown and strong brown loamy fine sand and fine sandy loam.

This soil is low in fertility. Water and air move at a moderately rapid rate through the soil. Surface runoff is slow. Roots penetrate easily. Crops are damaged by lack of water during dry periods in summer and fall. The water table is at a depth of 4 to 6 feet in December through April.

Guyton soil is in the swales. It makes up about 26 percent of each mapped area. Typically the surface layer is strongly acid, light brownish gray silt loam about 8 inches thick. The subsurface layer, to a depth of about 19 inches, is strongly acid, light brownish gray silt loam mottled with yellowish brown. To about 24 inches it is very strongly acid, light brownish gray silt loam. The subsoil to a depth of about 32 inches is strongly acid, gray silty clay loam. To 60 inches it is strongly acid, grayish brown silty clay loam.

This soil is low in fertility. Wetness causes air and water to move slowly through the soil. Poor aeration and wetness restrict root development of many plants. Water runs off the surface at a very slow rate. Crops may be damaged by lack of water during dry periods in summer and fall. Low areas are ponded for short periods after rains. The water table is at the surface or within 1.5 feet of the surface in December through May. This soil dries out more slowly than most adjoining soils at higher elevations.

Included in mapping are a few small areas of Caddo, Glenmora, and Messer soils at slightly higher elevations. Also included are a few areas of Guyton soils that are subject to flooding in winter and spring.

Most of the acreage is woodland. A few areas are pastureland.

The potential for most urban uses is good. Wetness is a problem in areas of Guyton soils.

The potential for trees is good. Wetness in the Guyton soil restricts the use of equipment. Regeneration is a problem.

The potential is fair for crops. It is good for pasture. Uneven topography and wetness in Guyton soil interfere with tillage. The sandy Bienville soil is somewhat droughty. Erosion is a hazard on Cahaba soil. Suitable crops are corn and truck and garden crops. Suitable for pasture plants are common bermudagrass, improved bermudagrass, crimson clover, and Pensacola bahiagrass.

Crop residue management helps to maintain organic matter content and reduce erosion. Drainage is needed in areas of the Guyton soil. The response to fertilizers is fair. Lime is needed on this soil.

The capability subclass is IIIw. The woodland group is 2o7 for Cahaba soil, 2s2 for Bienville soil, and 2w9 for Guyton soil.

Cr—Crowley-Vidrine complex. This complex consists of small areas of Crowley and Vidrine soils so intermingled that they cannot be separated at the scale selected for mapping. These loamy soils have a clayey subsoil. They formed in clayey alluvium in the southern part of the parish. Individual areas are 20 to 500 acres. The landscape is one of broad flats and many low mounds. Many of the mounds have been smoothed. Before the mounds were leveled, they were circular in shape, 30 to 50 feet wide, and 1 to 4 feet high. Vidrine soils are on the smoothed mound areas, and Crowley soils are on the flats. Slopes are 0 to 1 percent.

Crowley soils make up about 65 percent of each mapped area. Typically the surface layer is a strongly acid, dark brown silt loam about 6 inches thick. The subsurface layer, to a depth of about 21 inches, is strongly acid, grayish brown silt loam. The subsoil to about 40 inches is medium acid, dark gray silty clay mottled in shades of red and gray. To 46 inches it is medium acid, grayish brown silty clay mottled in shades of red and gray. To 57 inches it is slightly acid, grayish brown silty clay mottled in shades of brown and gray. To about 74 inches it is slightly acid, grayish brown silty clay loam mottled in shades of brown.

These soils are low in fertility. They are very slowly permeable to water and air. They are somewhat difficult to keep in good tilth because of surface crusting. Wetness causes poor aeration and restricts roots. Water runs off the surface at a very slow rate. The surface layer is wet for long periods in winter and spring, but crops are sometimes damaged by lack of water during dry periods in summer and fall. The water table is at a depth of 0.5 foot to 1.5 feet in December through April.

Vidrine soils make up about 30 percent of each mapped area. Typically the surface layer is strongly acid, dark brown silt loam about 7 inches thick. The subsoil to a depth of about 18 inches is very strongly acid, yellowish brown silt loam. To 22 inches it is very strongly acid, yellowish brown silty clay loam mottled with gray and red. To 43 inches it is dark gray and grayish brown silty clay mottled in shades of red and brown. To 61 inches it is pale brown silty clay loam mottled with yellowish brown. To a depth of about 70 inches the subsoil is yellowish brown silty clay loam mottled with light brownish gray.

These soils are low in fertility. They are wet for long periods. Air and water move slowly through the soil. Water runs off the surface at a medium rate. The water table is perched at a depth of 1 to 2 feet in December through April.

Included in mapping are a few small areas of Frost and Kinder soils at lower elevations and Mamou soils on side slopes. All these soils have a less clayey subsoil than Crowley and Vidrine soils.

Most of the acreage is cropland and pastureland. A few areas are woodland and homesites.

The potential for urban use is poor because of wetness and high shrink-swell potential. Low strength is a limitation for local roads and streets.

The potential for trees is good. In some years, wetness in winter and spring limits the use of equipment.

The potential for crops and pasture is fair. The mounds that have not been smoothed can interfere with tillage. Wetness is also a problem. Erosion is a minor problem on the Vidrine soil. Suitable crops are rice, wheat, and soybeans. Suitable for pasture are dallisgrass, bermudagrass, Pensacola bahiagrass, ryegrass, southern wild winter peas, and white clover.

Crop residue management helps to maintain organic matter content and reduces erosion. Planting rice in water helps to overcome the problem of crusting. Land smoothing and leveling increase the efficiency of flood irrigation and improve drainage (fig. 9). Drainage is generally needed for row crops. Most crops and pasture plants, except legumes, respond well to fertilizer. Generally lime is needed.

The capability subclass is IIIw. The woodland group is 2w9.

Fd—Frost silt loam. This level loamy soil is on broad low lying flats. It formed in loamy alluvium. Individual areas are 20 to 300 acres. Slopes are less than 1 percent.

Typically the surface layer is medium acid, grayish brown silt loam about 6 inches thick. The subsurface layer, to a depth of about 18 inches, is medium acid, light brownish gray silt loam. The subsoil to about 30 inches is medium acid, gray silt loam mottled with yellowish brown. To 46 inches it is medium acid, grayish

Figure 9.—This leveled irrigated field will be planted to rice. The soil is Crowley-Vidrine complex.

brown silt loam mottled with yellowish brown and streaked with dark gray. To 56 inches it is medium acid, light brownish gray silty clay loam mottled with yellowish brown. To a depth of about 65 inches the subsoil is slightly acid, light brownish gray silty clay loam mottled with yellowish brown.

This soil is low in fertility. Wetness causes poor aeration and restricts the roots of many plants. Water and air move slowly through the soil. Surface runoff is slow to very slow. The water table is at the surface or within 1.5 feet of the surface in December through April. Crops are sometimes damaged by lack of water during dry periods in summer and fall.

Included in mapping are a few small areas of the somewhat poorly drained Crowley and Vidrine soils at slightly higher elevations and areas of Frost soils in depressed areas and along drainageways that are occasionally flooded. Also included in some mapped areas are small areas of Kinder soils.

Most of the acreage is cropland and pastureland. A few areas are homesites.

The potential for urban use is poor. Wetness is the main limitation for use as septic tank absorption fields, sanitary landfills, homesites, and local roads and streets.

The potential for trees is good. Wetness, however, somewhat restricts the use of equipment.

The potential for crops and pasture is fair. Wetness is the main problem. Suitable crops are rice, soybeans, and wheat. Suitable for pasture are Pensacola bahiagrass, common bermudagrass, and ryegrass.

This soil is easy to work, but crusting is a problem. Open ditches are needed to remove excess water. Land smoothing or leveling will increase the efficiency of equipment and improve drainage. Crop residue management helps maintain organic matter content and improve tilth. Most crops and pasture plants respond well to fertilizer. Generally lime is needed.

The capability subclass is IIIw. The woodland group is 2w9.

Fo—Frost silt loam, occasionally flooded. This level loamy soil formed in loamy alluvium along drainageways. Individual areas are 30 to 400 acres. Slopes are less than 1 percent.

Typically the surface layer is very strongly acid, light brownish gray silt loam about 4 inches thick. The subsurface layer, to a depth of about 27 inches, is very strongly acid, gray silt loam mottled with yellowish brown. The subsoil to about 65 inches is very strongly acid, gray silty clay loam mottled in shades of brown and gray.

This soil is low in fertility. Wetness causes poor aeration and restricts the roots of many plants. Water and air move slowly through the soil. Flooding of short duration generally occurs in winter and late in spring. The water table is at the surface or within 1.5 feet of the surface December through April. This soil dries out more slowly than most of the adjoining soils that are at higher elevations. Crops are sometimes damaged by lack of water during dry periods in summer and fall.

Included in mapping are a few small areas of Crowley, Vidrine, and Wrightsville soils. Crowley and Vidrine soils are at slightly higher elevations and are better drained. Wrightsville soils are in similar parts of the landscape. They have a more clayey subsoil.

Most of the acreage is cropland and hardwood woodland. A few areas are pastureland.

The potential for urban use is poor because of flooding.

The potential for trees is good. Flooding and wetness somewhat restrict the use of equipment.

The potential for crops and pasture is poor. Flooding is too severe. Soybeans and rice can be grown if they are planted late after the flooding season. Suitable for pasture are Pensacola bahiagrass and common bermudagrass.

Drainage is needed. Land smoothing or leveling increases the efficiency of equipment and improves drainage. Most crops and pasture plants, except legumes, respond well to fertilizer. Generally lime is needed. Crop residue management helps to maintain organic matter content and improves tilth.

The capability subclass is IVw. The woodland group is 2w9.

Ge—Glenmora silt loam, 1 to 3 percent slopes. This very gently sloping loamy soil formed in loamy alluvium on ridges and side slopes of stream terraces of Pleistocene age. Individual areas are 40 to more than 500 acres.

Typically the surface layer is medium acid, dark grayish brown silt loam about 5 inches thick. The subsurface layer, to a depth of about 8 inches, is medium acid, brown silt loam. The subsoil to 12 inches is strongly acid, light yellowish brown silt loam. To 23 inches it is strongly acid, yellowish brown silty clay loam mottled with yellowish brown and red. To about 64 inches, the subsoil is medium acid, light brownish gray silty clay loam mottled with shades of red and brown.

This soil is low in fertility. It is slowly permeable to water and air. Water runs off the surface at a medium rate. The water table is at a depth of 2 to 3 feet in December through April. Crops are generally damaged by lack of water during dry periods in summer and fall.

Included in mapping are a few small areas of Caddo, Guyton, Kinder, and Messer soils. Caddo soils are at higher elevations and are grayer than this Glenmora soil. Guyton and Kinder soils are in lower parts of the landscape and are poorly drained. Messer soils are on low, circular mounds.

Most of the acreage is woodland. A few areas are cropland, pastureland, and homesites.

The potential for urban use is fair. Wetness is the main limitation if this soil is to be used as a septic tank absorption field, sanitary landfill, or homesite. Low strength is the main limitation for local roads and streets.

The potential for trees is good. Wetness is a minor limitation for the use of equipment.

The potential for crops is good. Low fertility and wetness are the main limitations. Suitable crops are rice, corn, and soybeans. The potential for pasture is good. Suitable for pasture are Pensacola bahiagrass, common bermudagrass, dallisgrass, crimson clover, and ryegrass.

This soil is easy to keep in good tilth. Practices such as planting row crops in the proper direction, contour farming, and stripcropping reduce the risk of erosion. Crop residue management improves tilth, helps to maintain organic matter content, and reduces erosion. Most crops and pasture plants respond well to fertilizer. Generally lime is needed.

The capability subclass is IIe. The woodland group is 2w8.

Gf—Gore very fine sandy loam, 1 to 5 percent slopes. This very gently sloping to gently sloping loamy soil has a clayey subsoil. It formed in clayey alluvium on stream terraces of Pleistocene age. Individual areas are 40 to 500 acres.

Typically the surface layer is medium acid, dark grayish brown very fine sandy loam about 3 inches thick. The subsurface layer is medium acid, brown silt loam about 3 inches thick. The subsoil to a depth of about 25 inches is strongly acid, red silty clay mottled in shades of brown. To 37 inches it is slightly acid, light brownish gray silty clay mottled in shades of red and brown. To 45 inches it is neutral, reddish brown clay mottled with gray. The underlying material to a depth of about 92 inches is mildly alkaline, reddish brown clay.

This soil is low in fertility. It is difficult for roots to penetrate the clayey subsoil. Water runs off the surface at a rapid rate. Air and water move very slowly through the soil. Crops lack water during dry periods in summer and fall. The water table is below 6 feet.

Included in mapping are a few small areas of Acadia and Wrightsville soils. These soils are in lower parts of the landscape and are more poorly drained.

Most of the acreage is mixed pine and hardwood woodland. A few areas are in pastureland.

The potential for urban use is poor because of high shrink-swell potential. Very slow permeability is the principal limitation if the soil is used as a septic tank absorption field. Low strength is a limitation for local roads and streets.

The potential for trees is fair. Poor trafficability somewhat limits the use of equipment.

The potential for crops and pasture is poor. The erosion hazard severely limits the use of this soil for cultivated crops. Suitable for pasture are bermudagrass, Pensacola bahiagrass, dallisgrass, crimson clover, and ryegrass.

This soil is difficult to work. Terracing and stripcropping help to control runoff and reduce erosion in cultivated areas. Crop residue management helps to maintain organic matter content, improves tilth, and reduces erosion. The response of crops and pasture plants to fertilizer is only fair. Generally lime is needed.

The capability subclass is IVe. The woodland group is 3c2.

Go—Guyton silt loam, occasionally flooded. This level loamy soil formed in loamy alluvium on broad depressions of stream terraces. It is subject to occasional flooding. Individual areas range from 100 to more than 1,000 acres. Slopes are less than 1 percent.

Typically the surface layer is strongly acid, brown silt loam about 7 inches thick. The subsurface layer, to a depth of about 18 inches, is strongly acid, light brownish gray silt loam mottled with yellowish brown. The subsoil to 32 inches is strongly acid, gray silt loam mottled with yellowish brown. To 48 inches it is very strongly acid, grayish brown silty clay loam mottled with yellowish brown. To about 66 inches it is very strongly acid, light brownish gray silt loam.

This soil is low in fertility. Wetness causes air and water to move slowly through the soil and restricts the roots of many plants. Water runs off the surface at a very slow rate. Low areas are ponded for short periods after heavy rains. Flooding for short duration occurs mostly in winter and spring. The water table is perched at the surface or within 1.5 feet of the surface in December through May. Crops may be damaged by lack of water during dry periods in summer and fall. This soil dries out more slowly than most of the adjoining soils at higher elevations.

Included in mapping are a few small areas of Caddo, Cahaba, Glenmora, and Messer soils. All these soils are at higher elevations. Also included are small areas of frequently flooded Guyton soils in the lowest parts of the landscape.

Most of the acreage is hardwood woodland. A few areas are pastureland.

The potential for urban use is poor because of flooding and wetness.

The potential for trees is good. Flooding somewhat restricts the use of equipment and causes high seedling mortality.

The potential is poor for crops. It is fair for pasture. Flooding is too severe for some crops. Suitable crops are rice and soybeans. Suitable for pasture are common bermudagrass and Pensacola bahiagrass. Drainage is needed. The response of most crops and pasture plants to fertilizers is only fair. Generally lime is need.

The capability subclass is IVw. The woodland group is 2w9.

Gt—Guyton silt loam, ponded. This level, loamy, very poorly drained soil formed in loamy alluvium in abandoned stream channels. It is in narrow meandering tracts about 300 feet wide and 0.5 mile to 2 miles long. Slopes are less than 1 percent.

Typically the surface layer is strongly acid, grayish brown silt loam about 8 inches thick. The subsurface layer, to a depth of about 26 inches, is strongly acid, grayish brown silt loam mottled with gray. The subsoil to

60 inches is very strongly acid, light brownish gray silty clay loam mottled with strong brown.

This soil is low in fertility. Wetness and ponding cause air and water to move slowly through the soil and restrict the roots of many plants. The water table is within 0.5 foot of the surface or 1 foot above the surface in December through May.

Included in mapping at slightly higher elevations are a few small areas of Caddo soils and Guyton soils that are occasionally flooded.

Almost all the acreage is native freshwater marsh (fig. 10). A few areas are pastureland.

The potential for urban use is poor because of wetness and ponding.

The potential for trees is poor. Wetness and ponding very severely restrict the use of equipment and cause high seedling mortality. Ponding is generally too severe for commercial planting of trees.

Wetness and ponding are generally too severe for either cropland or pastureland.

The soil has good potential as wetland wildlife habitat.

The capability subclass is VIIw.

Gu—Guyton-Messer complex. This complex consists of small areas of Guyton and Messer soils so intermingled that they cannot be separated at the scale selected for mapping. These soils formed in loamy alluvium in depressed areas mainly in the north-central part of the parish. Individual areas are 40 to 400 acres. The landscape is one of broad, low lying flats and many low mounds. The mounds are circular, 30 to 50 feet wide, and 1 foot to 4 feet high. Messer soil is on the mounds, and Guyton soil is on the flats. Slopes range from about 1 percent on the flats to about 5 percent on the mounds.

Guyton soil, on the flats, makes up about 54 percent of each mapped area. Typically the surface layer is very strongly acid, grayish brown silt loam about 4 inches thick. The subsurface layer, to a depth of about 21 inches, is very strongly acid, light brownish gray silt loam mottled with shades of brown. The subsoil to 38 inches is strongly acid, gray silty clay loam mottled with yellowish brown. To 60 inches it is strongly acid, light brownish gray silty clay loam mottled with yellowish brown.

Figure 10.—Marsh vegetation on Guyton silt loam, ponded. The trees in the background are on Caddo-Messer complex.

This soil is low in fertility. Wetness causes slow movement of air and water through the soil, and it restricts the roots of many plants. Water runs off the surface at a very slow rate. Crops are likely to be damaged by lack of water during dry periods in summer and fall. Water stands in low areas for short periods after rains. The water table is perched at the surface or above 1.5 feet in December through May. This soil dries out more slowly than most adjoining soils at higher elevations.

Messer soil, on low mounds, makes up about 36 percent of each mapped area. Typically the upper 3 inches of the surface layer is medium acid, dark grayish brown silt loam, and the lower 4 inches is strongly acid, dark brown silt loam. The subsurface layer, to a depth of about 11 inches, is very strongly acid, yellowish brown silt loam. The subsoil to about 32 inches is very strongly acid, light yellowish brown silt loam mottled in shades of brown. To 38 inches it is very strongly acid, pale brown silty clay loam mottled in shades of brown and red. To a depth of about 65 inches the subsoil is very strongly acid, yellowish brown silty clay loam mottled with red.

This soil is low in fertility. Water and air move slowly through the soil. Roots penetrate the soil easily. This soil is wet for a short period after rains. Crops may be damaged by lack of water during dry periods in summer and fall. The water table is perched at a depth of 2 to 4 feet in December through March.

Included in mapping are small areas of Caddo and Glenmora soils at slightly higher elevations. Also included are small areas of Guyton soils that are subject to occasional flooding.

Most of the acreage is woodland. A few areas are pastureland and cropland.

The potential for urban use is poor because of wetness.

The potential for trees is good. Wetness somewhat restricts the use of equipment and causes high seedling mortality.

The potential for crops and pasture is fair. Wetness is the main limitation. Wetness and the many low mounds interfere with tillage. Erosion is a minor problem on the Messer soil. Suitable crops are rice and soybeans. Suitable for pasture are common bermudagrass, ryegrass, southern wild winter peas, and Pensacola bahiagrass.

These soils are easy to work and to keep in good tilth. Crop residue management improves tilth, helps to maintain organic matter content, and reduces erosion. Land smoothing and leveling increase the efficiency of irrigation for rice and improve drainage. Drainage is needed where row crops are grown. Most crops and pasture plants respond well to fertilizer. Generally lime is needed.

The capability subclass is IIIw. The woodland group is 2w9 for Guyton soil and 2w8 for Messer soil.

GY—Guyton and Cascilla soils, frequently flooded. These nearly level loamy soils formed in loamy alluvium on flood plains of drainageways. They are subject to frequent flooding (fig. 11). Guyton and Cascilla soils are in an irregular pattern on the landscape. Most mapped areas contain both soils, but a few areas contain only one. In mapped areas that contain both soils, Guyton soil is at the lower elevations and in depressed areas. Cascilla soil is at higher elevations on natural levees that are mostly less than 100 feet wide. Slopes are less than 1 percent.

Guyton soil makes up about 55 percent of most mapped areas. Typically the surface layer is strongly acid, grayish brown silt loam about 4 inches thick. The subsurface layer, to a depth of 24 inches, is strongly acid, light brownish gray silt loam. The subsoil to 38 inches is strongly acid, gray silt loam. To 67 inches it is very strongly acid, light brownish gray silty clay loam.

This soil is low in fertility. Wetness causes slow movement of air and water through the soil and restricts the roots of many plants. Water runs off the surface at a slow rate. This soil is frequently flooded by 1 to 8 feet of water up to 10 days, mostly in winter and spring. The water table is perched at the surface or above 1.5 feet in December through May. The surface layer is wet for long periods in winter and spring. This soil dries out more slowly than most adjacent soils at higher elevations.

Cascilla soil makes up about 30 percent of most mapped areas. Typically the surface layer is strongly acid, brown silt loam about 6 inches thick. The subsoil, to a depth of 66 inches, is very strongly acid, dark yellowish brown and yellowish brown silt loam.

This soil is low in fertility. Water and air move through the soil at a moderate rate. Water runs off the surface at a slow rate. Roots penetrate easily. This soil is frequently flooded with 1 to 8 feet of water for periods up to 10 days, mostly in winter and spring. The water table is below 6 feet.

Included in mapping are small areas of a soil that is coarser textured but is otherwise similar to Cascilla soil.

Most of the acreage is hardwood woodland. Some areas are pasture.

The potential for urban use is poor because of flooding and wetness.

The potential for trees is good. Flooding and wetness severely restrict the use of equipment and cause high seedling mortality.

The potential for crops and pasture is poor because of flooding and wetness. Flooding is generally too severe for crops. Grazing is restricted during periods of flooding and the wet season. Suitable for pasture are bermudagrass and Pensacola bahiagrass. The response of most crops and pasture plants to additions of fertilizer is only fair. Lime is needed.

The capability subclass is Vw. The woodland group is 2w9 for Guyton soil and 1w8 for Cascilla soil.

Figure 11.—Floodwater on Guyton and Cascilla soils, frequently flooded.

Kd—Kinder-Messer complex. This complex consists of areas of Kinder and Messer soils so intermingled that they cannot be separated at the scale selected for mapping. These nearly level, loamy soils formed in loamy alluvium. Individual areas range from 40 to 400 acres. The landscape is one of broad flats and mainly low mounds. Most of the mounds have been smoothed. The mounds were circular and 1 to 4 feet high before they were leveled. Messer soil is on the mounds or smoothed mound areas, and Kinder soil is on the flats. Slopes are 0 to 1 percent.

Kinder soil, on the flats, makes up about 70 percent of each mapped area. Typically the surface layer is medium acid, grayish brown silt loam about 7 inches thick. The subsurface layer, to a depth of 17 inches, is strongly acid, light brownish gray silt loam. The subsoil to 23 inches is strongly acid, grayish brown silty clay loam with yellowish red mottles and light brownish gray silt loam. To 39 inches it is strongly acid, dark gray silty clay loam mottled with red. To 54 inches it is medium acid, light brownish gray silty clay loam mottled with yellowish brown. The underlying material to a depth of about 65 inches is neutral, light brownish gray silty clay loam mottled with yellowish brown.

This soil is low in fertility. Water and air move slowly through the soil. Water runs off the surface at a slow rate. The surface layer is wet for significantly long periods in winter and spring. Crops may be damaged by lack of water during dry periods in summer and fall. The water table is perched at the surface or above 2 feet in December through April.

Messer soil, on mounds or in smoothed mound areas, makes up about 25 percent of each mapped area. Typically the surface layer is medium acid, dark grayish brown silt loam about 4 inches thick. The subsurface layer, to a depth of 7 inches, is very strongly acid, pale brown silt loam. The subsoil to 28 inches is very strongly acid, yellowish brown silt loam. To 65 inches it is very strongly acid, yellowish brown silty clay loam mottled in shades of red.

The soil is low in fertility. Water and air move slowly through the soil. Roots penetrate easily. This soil is wet for long periods after rains. Crops may be damaged by lack of water during dry periods in summer and fall. The water table is perched at a depth of 2 to 4 feet in December through March.

Included in mapping are a few small areas of Crowley, Frost, Glenmora, Guyton, and Wrightsville soils. Frost, Guyton, and Wrightsville soils occur at slightly lower elevations and do not have red mottles in the subsoil. Crowley and Glenmora soils are at slightly higher elevations.

Most of the acreage is cropland and woodland. Some areas are pastureland.

The potential for urban use is poor because of wetness. Low strength is a limitation for local roads and streets.

The potential for trees is good. Wetness somewhat limits the use of equipment.

The potential for crops and pasture is fair. Most of the mounds have been smoothed. Wetness is the main limitation. Erosion is a minor problem in areas of Messer soil that have not been smoothed. Suitable crops are rice and soybeans. Suitable for pasture are dallisgrass, bermudagrass, Pensacola bahiagrass, ryegrass, southern wild winter peas, and white clover.

Crop residue management improves organic matter content and reduces erosion. Planting rice in water helps to overcome the problem of crusting. Land smoothing and leveling increase the efficiency of flood irrigation and improve drainage. Drainage is generally needed for row crops. Most crops and pasture plants respond well to additions of fertilizer. Generally lime is needed.

The capability subclass is IIIw. The woodland group is 2w9 for Kinder soil and 2w8 for Messer soil.

Ma—Malbis fine sandy loam, 1 to 5 percent slopes. This very gently sloping to gently sloping loamy soil formed in loamy alluvium on ridge crests and side slopes on uplands. Individual areas range from 20 to more than 1,000 acres. Commonly slopes are short and convex.

Typically the surface layer is strongly acid, dark grayish brown fine sandy loam about 5 inches thick. The subsoil to a depth of about 11 inches is strongly acid, yellowish brown fine sandy loam. To 74 inches it is strongly acid, yellowish brown and strong brown sandy clay loam mottled in shades of brown and gray.

This soil is low in fertility. Water and air move moderately slowly through the soil. Water runs off the surface at a medium rate. The surface layer drys out quickly after a rain. The water table is perched at a depth of 2.5 to 4 feet in December through March. Crops may be damaged by lack of water during dry periods in summer and fall.

Included in mapping are a few small areas of the moderately well drained Beauregard soils at lower elevations and the well drained Ruston soils at higher elevations.

Most of the acreage is pine woodland. A few areas are cropland, pastureland, and homesites.

The potential for urban use is good. Low strength is a moderate limitation for local roads and streets.

The potential for trees is good. There are no major limitations.

The potential is good for pasture. It is fair for crops. Low fertility is a limitation, and erosion is a problem where the soil is without a vegetative cover. Suitable crops are soybeans, corn, and truck and garden crops. Suitable for pasture are Pensacola bahiagrass, dallisgrass, common bermudagrass, improved bermudagrass, ryegrass, crimson clover, and southern wild winter peas.

Tilth is easy to maintain. Terracing, farming on the contour, and stripcropping reduce erosion. Crop residue management improves tilth, helps to maintain organic matter content, and reduces erosion.

The capability subclass is IIe. The woodland group is 2o1.

Mm—Mamou silt loam. This very gently sloping loamy soil formed in loamy alluvium on side slopes of natural levees along abandoned stream channels. Individual areas range from 40 to 500 acres. Slopes are 1 to 3 percent.

Typically the surface layer is medium acid, dark grayish brown silt loam about 8 inches thick. The subsurface layer, to a depth of 16 inches, is strongly acid, yellowish brown silt loam mottled with grayish brown. The subsoil to 24 inches is strongly acid, dark grayish brown silty clay loam mottled with red. To 36 inches it is strongly acid, yellowish brown silty clay loam mottled with red. To 47 inches it is medium acid, yellowish brown silty clay loam mottled with brown and red. The underlying material to a depth of about 60 inches is neutral, mottled yellowish brown, red, and light brownish gray loam.

This soil is low in fertility. It is easy to work but is subject to crusting after heavy rains. Water and air move slowly through the soil. Water runs off the surface at a medium rate. This soil is slow to dry in spring. Crops are sometimes damaged by lack of water during dry periods in summer and fall. The water table is perched at a depth of 3 to 4 feet in December through April.

Included in mapping are a few small areas of Crowley soils at higher elevations, Frost soils at lower elevations, and Vidrine soils on low mounds. Crowley soils are grayer, Frost soils are more poorly drained, and Vidrine soils are more clayey in the lower part of the subsoil.

Most of the acreage is cropland. A few areas are pastureland, homesites, and woodland.

The potential for urban use is fair. High shrink-swell potential is the main limitation. Low strength is a limitation for local roads and streets.

The potential for trees is good. Wetness somewhat restricts the use of equipment.

The potential for crops and pasture is good. Limitations are low fertility and the erosion hazard. Suitable for crops are rice, wheat, and soybeans. Suitable for pasture are dallisgrass, common bermudagrass, Pensacola bahiagrass, ryegrass, and white clover.

Land smoothing and uniform distribution of water increase the efficiency of irrigation for rice. Planting row crops in the proper direction reduces erosion. Crop residue management improves tilth, helps to maintain organic matter content, and reduces erosion. Planting rice in water helps to overcome the problem of crusting. Most crops and pasture plants respond well to additions of fertilizer. Generally lime is needed.

The capability subclass is IIe. The woodland group is 2w8.

Rt—Ruston fine sandy loam, 1 to 5 percent slopes. This very gently sloping to gently sloping loamy soil formed in loamy alluvium on side slopes and ridges on uplands. Individual areas range from 30 to 300 acres.

Typically the surface layer is medium acid, dark brown fine sandy loam about 5 inches thick. The subsurface layer is strongly acid, yellowish brown fine sandy loam about 5 inches thick. The subsoil to a depth of about 28 inches is strongly acid, red sandy clay loam. To 40 inches it is strongly acid, yellowish red sandy clay loam. To 50 inches it is very strongly acid, yellowish red sandy loam. To about 65 inches it is very strongly acid, yellowish red sandy clay loam.

This soil is low in fertility. It dries quickly and is easy to work. Roots penetrate easily. Crops may be damaged by lack of water during dry periods in summer and fall. The water table is below 6 feet. Water runs off the surface at a medium rate. Air and water move through the soil at a moderate rate.

Included in mapping are small areas of Beauregard and Malbis soils. Also included in a mapped area along Turner road is a soil that has a loamy fine sand surface layer 20 to 35 inches thick but is otherwise similar to Ruston soil. The moderately well drained Beauregard and Malbis soils are on similar parts of the landscape.

Most of the acreage is woodland and pastureland. A few areas are cropland and homesites.

The potential for urban use is good because of the gentle slopes and the properties of this soil.

The potential for trees is good. There are few limitations.

The potential is good for pasture. It is fair for crops. Erosion is the main hazard if this soil is used for crops. Low fertility is also a limitation. Suitable crops are soybeans, corn, and truck and garden crops. Suitable for pasture are common bermudagrass, improved bermudagrass, Pensacola bahiagrass, ryegrass, dallisgrass, and crimson clover.

This soil is easy to keep in good tilth. Terracing and farming on the contour help to control runoff and reduce erosion. Crop residue management improves tilth, helps to maintain organic matter content, and reduces erosion. Most crops and pasture plants, except legumes, respond well to additions of fertilizer. Generally lime is needed.

The capability subclass is IIIe. The woodland group is 2o1.

Wr—Wrightsville-Vidrine complex. This complex consists of areas of Wrightsville and Vidrine soils so intermingled that they cannot be separated at the scale selected for mapping. These loamy soils have a clayey subsoil. They formed in clayey alluvium on broad flats and in drainageways. Individual areas range from 40 to 500 acres. The landscape is one of low lying, broad flats and many low mounds. The mounds are circular, 30 to 50 feet wide, and 1 to 4 feet high. Vidrine soils are on the mounds, and Wrightsville soils are on the flats. Slopes are 0 to 1 percent.

Wrightsville soil makes up about 65 percent of each mapped area. Typically the surface layer is very strongly acid, dark grayish brown silt loam about 4 inches thick. The subsurface layer, to a depth of 13 inches, is very strongly acid, light brownish gray silt loam mottled with yellowish brown. The subsoil to 21 inches is very strongly acid, light brownish gray silty clay loam mottled with yellowish brown. To 34 inches it is strongly acid, light brownish gray silty clay mottled in shades of brown. To 49 inches it is strongly acid, gray silty clay mottled with yellowish brown. The underlying material to a depth of about 60 inches is neutral, grayish brown silty clay mottled with yellowish brown.

This soil is low in fertility. Tilth is easy to maintain, but the surface is subject to crusting if the soil is clean tilled. Water and air move very slowly through the soil. Wetness causes poor aeration and restricts roots. Crops are likely to be damaged by lack of water during dry periods in summer and fall. Water runs off the surface at a slow rate. The water table is perched at a depth of 0.5 foot to 1.5 feet in December through April. The surface layer is wet for long periods in winter and spring.

Vidrine soil makes up about 30 percent of each mapped area. Typically the surface layer is strongly acid, grayish brown silt loam about 6 inches thick. The subsoil to a depth of about 15 inches is strongly acid, light yellowish brown silt loam. To 37 inches it is strongly acid, grayish brown silty clay. To 55 inches it is medium acid, light brownish gray silty clay loam. To about 75 inches it is neutral, gray and yellowish brown silt loam.

Vidrine soil is low in fertility. It is wet for long periods. Crops may be damaged by lack of water during dry periods in summer and fall. Air and water move slowly through the soil. Water runs off the surface at a medium rate. The water table is perched at a depth of 1 to 2 feet in December through April.

Included in mapping are small areas of Acadia and Kinder soils at higher elevations and Gore soils on side slopes.

Most of the acreage is mixed pine and hardwood woodland. A few areas are cropland, pastureland, and homesites.

The potential for urban use is poor because of wetness and high shrink-swell potential.

The potential for woodland is fair. Wetness limits the use of equipment in winter and spring.

The potential for crops and pasture is fair. Wetness is a limitation. The many low mounds on the landscape also interfere with tillage. Erosion is a minor problem in areas of Vidrine soil. Suitable crops are rice and soybeans. Suitable for pasture are common bermudagrass, Pensacola bahiagrass, southern wild winter pea, and ryegrass.

Land smoothing and leveling increase the efficiency of irrigation for rice and improve drainage. Drainage is needed if row crops are grown. Crop residue management improves tilth, helps to maintain organic matter content, and reduces erosion. Planting rice in water overcomes the problem of crusting. Most crops and pasture plants, except legumes, respond well to additions of fertilizer. Generally lime is needed, especially on pastureland.

The capability subclass is IIIw. The woodland group is 3w9 for Wrightsville soil and 2w9 for Vidrine soil.

use and management of the soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help avoid soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavior characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreation facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where wetness or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

crops and pasture

M. Dale Rockett, conservation agronomist, Soil Conservation Service, helped prepare this section.

General management needed for crops and pasture is suggested in this section. The crops or pasture plants best suited to the soils, including some not commonly grown in the survey area, are identified; the system of land capability classification used by the Soil Conservation Service is explained; and the estimated yields of the main crops and hay and pasture plants are listed for each soil.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under "Detailed soil map units." Specific information can be obtained from the local office of the Soil Conservation Service or the Cooperative Extension Service. Specific recommendations for fertilizers, crop varieties, and seeding mixtures are not given. These change from time to time as more complete information is obtained. For more detailed information, consult the local staff of the Soil Conservation Service, the Extension Service, or the Louisiana Agricultural Experiment Station.

More than 346,500 acres in Allen Parish was woodland, according to the 1976 annual report of the Louisiana Cooperative Extension Service. About 100,000 acres was planted to cultivated crops, mainly soybeans, 70,000 acres, and rice, 28,000 acres. More than 11,000 acres was used for permanent pasture in 1967, according to the Conservation Needs Inventory published in 1969. There has been a gradual increase in cropland acreage. There has been a slight decrease in woodland acreage and a slight increase in the acreage in urban use.

Differences in crop suitability and management needs result from differences in soil characteristics such as fertility, erodibility, organic matter content, availability of water for plant growth, drainage, and flood hazard. Each farm has its own soil pattern and, therefore, its own management concerns. Some principles of farm management, however, apply only to specific soils and certain crops. This section of the survey presents the general principles of management that can be applied widely to the soils in the parish.

The soils in Allen Parish range from very strongly acid to medium acid in the surface layer. All soils used for crops are low in organic matter content and available nitrogen. They generally need a complete fertilizer. Generally lime is also needed for pasture. The amount of fertilizer needed depends on the crop to be grown, on past cropping, on the desired yield, and on the kind of soil. The amount should be determined by laboratory analysis.

A soil sample for laboratory testing should consist of a single kind of soil and should represent no more than 10 acres. Agricultural agencies in the parish can supply detailed information and instructions on preparing soil samples (*3*).

Organic matter, an important source of nitrogen for crop growth, is also important in increasing the rate of water intake, reducing crusting, reducing erosion, and maintaining tilth. All soils in Allen Parish are low in organic matter content.

Growing plants with extensive root systems and an abundance of foliage, leaving plant residue on the surface, adding manure, and rotating perennial grasses and legumes with other crops can increase the content of organic matter. In this parish, residue from rice straw is important in maintaining organic matter content.

Soils need to be tilled only enough to prepare a seedbed and to control weeds. Excessive tillage usually destroys the structure of the soil. A compacted layer develops in the medium textured soils, such as Crowley and Frost soils, if they are plowed repeatedly to the same depth or plowed when wet. This compacted layer, which develops just below plow depth, is generally known as a traffic pan or plowpan. Its rate of development can be reduced by not plowing when the soil is wet and by varying the depth of plowing. A compacted layer can be broken up by subsoiling or chiseling.

Using tillage implements that stir the surface but leave crop residue on or near the surface can protect the soil during heavy rains. This residue reduces crusting, slows runoff, increases infiltration, and reduces erosion.

Many soils in the parish need surface drainage to make them more suitable for crops. Many areas are drained by a gravity drainage system consisting of field drains (quarter drains), laterals (V-ditches), and main ditches. The success of this system depends on the availability of outlets. Another method used to improve drainage is land grading or smoothing, which consists of precision smoothing to a uniform grade. This practice creates larger and more uniformly shaped fields that are better adapted to the use of modern multirow farm equipment.

In a good cropping system, the sequence of crops should cover the soil with vegetation as much of the year as possible. In this parish, rice is usually grown 1 year in 3 in rotation with pasture or soybeans. A suitable cropping system varies with the needs of the farmer and the uses of the soil. Additional information on cropping systems can be obtained from the Soil Conservation Service, the Extension Service, and the Louisiana Agricultural Experiment Station.

Erosion is a major concern on some of the Beauregard, Glenmora, Malbis, and Ruston soils when they are bare of vegetation. Loss of the surface layer through erosion is damaging for two reasons. First, it reduces productivity. Second, it results in sedimentation of streams and rivers. Controlling erosion minimizes sedimentation and improves the quality of water for municipal use and recreation and for fish and wildlife.

Terracing, contouring, contour stripcropping, and planting row crops in the proper direction help to reduce soil loss. These practices are best adapted to soils that have smooth, uniform slopes. Terracing and stripcropping are not adapted to the production of sugarcane on these soils.

Another effective method of reducing erosion is using a cropping system that keeps a vegetative cover on the soil for extended periods. Controlling erosion is not difficult in most of the parish because slopes are level and nearly level. Nevertheless, sheet erosion is somewhat high on fallow, plowed fields and in newly constructed drainage ditches. Some gully erosion occurs at overfalls into drainage ditches. Maintaining a plant or residue cover on the soil as much of the time as possible, keeping tillage at a minimum, and controlling weeds by methods other than fallow plowing reduce the risk of sheet erosion. Newly constructed ditches should be seeded immediately after construction. Water control structures placed at overfalls into drainage ditches help to control gully erosion.

yields per acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 6. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby parishes and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green-manure crops; and harvesting that insures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 6 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Soil Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils.

land capability classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor does it consider possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for woodland, and for engineering purposes.

In the capability system, soils are generally grouped at three levels: capability class, subclass, and unit. Only class and subclass are used in this survey. These levels are defined in the following paragraphs.

Capability classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have slight limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class I there are no subclasses because the soils of this class have few limitations. Class V contains only the subclasses indicated by *w, s,* or *c* because the soils in class V are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, woodland, wildlife habitat, or recreation.

The capability classification of each map unit is given in the section "Detailed soil map units."

woodland management and productivity

H. Ford Fallin, woodland conservationist, Soil Conservation Service, helped prepare this section.

About 70 percent of Allen Parish, or 346,500 acres, (*13*) is dominantly pine woodland. Most of the woodland is on the Coastal Plain Uplands. The rest is on the Coastal Prairie, mainly in the southeastern part of the parish. About 9 percent, or 44,640 acres, is dominantly southern hardwood woodland and is subject to frequent flooding.

The main species are loblolly pine, slash pine, longleaf pine, shortleaf pine, white oak, water oak, red oak, sweetgum, hickory, green ash, sycamore, blackgum, beech, magnolia, sweetbay, red maple, winged elm, sugarberry, eastern redcedar, Chinese tallow, flowering dogwood, persimmon, black willow, black cherry, baldcypress, water tupelo, and sassafras.

Commercial timber is used by nine wood industries—two sawmills, a southern pine plywood plant, a pulp and paper mill, a chip and stud mill, and four other plants that produce miscellaneous products such as posts, crossties, poles, and piling. In 1975, according to the Sixteenth Progress Report of the Louisiana Forestry Commission, 29,462,432 board feet (Doyle scale) of sawtimber and 61,991 standard cords of pulpwood were harvested in the parish.

More than 100,000 acres has been planted or seeded to pine trees. According to soil-woodland site correlation studies, planted trees grow faster than natural stands. At age 50, the planted trees are about 10 feet taller than the natural stands.

Some timber companies are attempting to change the species composition on some of the wet sites. They are clearcutting, preparing sites, bedding, and planting slash and loblolly pine in increasing numbers on these wet soils, mostly on Guyton silt loam, occasionally flooded.

Table 7 can be used by woodland owners or forest managers in planning the use of soils for wood crops. Only those soils suitable for wood crops are listed. The table lists the ordination (woodland suitability) symbol for each soil. Soils assigned the same ordination symbol require the same general management and have about the same potential productivity.

The first part of the *ordination symbol*, a number, indicates the potential productivity of the soils for important trees. The number 1 indicates very high productivity; 2, high; 3, moderately high; 4, moderate; and 5, low.

The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *x* indicates stoniness or rockiness; *w*, excessive water in or on the soil; *t*, toxic substances in the soil; *d*, restricted root depth; *c*, clay in the upper part of the soil; *s*, sandy texture; *f*, high content of coarse fragments in the soil profile; and *r*, steep slopes. The letter *o* indicates that limitations or restrictions are insignificant. If a soil has more than one limitation, the priority is as follows: x, w, t, d, c, s, f, and r.

The third part of the symbol, a numeral, indicates the kind of trees for which the soils are best suited and the severity of the hazard or limitation. The numerals 1, 2, and 3 indicate slight, moderate, and severe limitations, respectively, and suitability for needleleaf trees. The numerals 4, 5, and 6 indicate slight, moderate, and severe limitations, respectively, and suitability for broadleaf trees. The numerals 7, 8, 9 indicate slight, moderate, and severe limitations, respectively, and suitability for both needleleaf and broadleaf trees.

In table 7, *slight, moderate,* and *severe* indicate the degree of the major soil limitations to be considered in management.

Ratings of the *erosion hazard* indicate the risk of loss of soil in well managed woodland. The risk is *slight* if the expected soil loss is small, *moderate* if measures are needed to control erosion during logging and road construction, and *severe* if intensive management or special equipment and methods are needed to prevent excessive loss of soil.

Ratings of *equipment limitation* reflect the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. A rating of *slight* indicates that use of equipment is not limited to a particular kind of equipment or time of year; *moderate* indicates a short seasonal limitation or a need for some modification in management or in equipment; and *severe* indicates a seasonal limitation, a need for special equipment or management, or a hazard in the use of equipment.

Seedling mortality ratings indicate the degree to which the soil affects the mortality of tree seedlings. Plant competition is not considered in the ratings. The ratings apply to seedlings from good stock that are properly planted during a period of sufficient rainfall. A rating of *slight* indicates that the expected mortality is less than 25 percent; *moderate*, 25 to 50 percent; and *severe*, more than 50 percent.

The *potential productivity* of merchantable or *common trees* on a soil is expressed as a *site index*. This index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. It is, for example, the average height at age 30 for eastern cottonwood, age 35 for American sycamore, and age 50 for all other species. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

Trees to plant are those that are suited to the soils and to commercial wood production.

recreation

The soils of the survey area are rated in table 8 according to limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewerlines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreation use by the duration and intensity of flooding and the season when flooding occurs. In planning recreation facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 8, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures.

The information in table 8 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 11 and interpretations for dwellings without basements and for local roads and streets in table 10.

Camp areas require site preparation such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have mild slopes and are not wet or subject to flooding during the period of use. The surface absorbs rainfall readily but remains firm.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet and are not subject to flooding during the period of use.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is firm after rains.

Paths and trails for hiking, horseback riding, and bicycling should require little or no cutting and filling. The best soils are not wet, are firm after rains, and are not subject to flooding more than once a year during the period of use.

wildlife habitat

E. Ray Smith, Jr., biologist, Soil Conservation Service, helped prepare this section.

The soils of Allen Parish provide food and cover for many kinds of wildlife. The available habitat depends on the types of plants the soil can support and on man's treatment of the land and vegetation. Because of land use, some soils never will support significant numbers of wildlife. Other soils will continue to support populations of animals and birds, unless the land use changes.

The most important game animals and birds in this parish are rabbits, squirrels, deer, turkey, quail, ducks, and doves.

The deer and turkey populations are highest along the Calcasieu River and Whiskey Chitto Creek and its tributaries and in the West Bay Game Management area. Gray and fox squirrels are abundant in wooded areas throughout the parish; the highest populations are in the hardwood bottoms and mixed pine and hardwood stands. Bear have been reported in two localities in the parish but are very few in number. Many other species are found throughout this parish in varying numbers, including the armadillo, wood rat, whitefooted mouse, Eastern harvest mouse, cotton mouse, golden mouse, Hispid cotton rat, Hispid pocket mouse, and marsh rice rat.

Cottontail and quail are most plentiful in agricultural areas that provide favorable cover and food. Quail also inhabit open pine woods where there is a good ground cover of grasses and legumes. The quail population is moderate to high in most of the parish. Swamp rabbits are confined to the bottom lands along the major river, creeks, bayous, and other low-lying, wooded areas. Their number varies according to the management of these woodlands.

Ducks, both native and migratory, are found along the Calcasieu River and Whiskey Chitto Creek. Ducks often feed in the ricefields in the southern part of the parish. Their number varies from year to year but is never high.

Doves nest throughout the parish but are not abundant. Low to moderate populations occur around agricultural fields in fall and winter.

Two other migratory birds, woodcock and common snipe, occur in moderate numbers in fall and winter. Woodcock are confined to brushy woodland, and in some locations populations are high. They either feed in the cover they inhabit or fly to farmed areas at night for their favorite food—earthworms. Common snipe inhabit open cropland or pastures that are "puddled." Concentrations of these birds can be high locally, but the species cannot be considered abundant parish wide.

A moderate to high population of furbearers inhabits the parish. The most important species are nutria, mink, fox, raccoon, coyote, and skunk.

Allen Parish harbors two endangered species—the American alligator and the red-cockaded woodpecker. A few American alligators are along the Calcasieu River and its adjacent sloughs and swamps, but their population is not high. A small colony of red-cockaded woodpeckers has been found in a stand of longleaf pine 2.5 miles northwest of Kinder.

Allen Parish has a wide variety of nongame birds, ranging from the tiny hummingbird to wood storks. All sorts of wading birds are plentiful. In fall and spring, millions of warblers, flycatchers, swallows, sparrows, and other migratory birds pass through this parish. One of the most unusual is the roadrunner, which has moved in from Texas. These birds have scattered populations throughout the parish. In summer, the wood ibis, or wood stork, is seen in small flocks around sloughs and swamps.

Fishing is limited to the Calcasieu River and Whiskey Chitto Creek and its tributaries, Bayou Nezpique, and 101 farm ponds. The water quality of the river, creeks, and bayous is considered good by the Louisiana Department of Wildlife and Fisheries.

The Calcasieu River and Whiskey Chitto Creek and its tributaries—Six Mile Creek and Ten Mile Creek—have a high standing crop of fish. The Calcasieu has a standing crop of 65 pounds per acre, and Whiskey Chitto and its tributaries have a standing crop of 50 pounds per acre. Bayou Nezpique, because of low water late in summer and in fall, has a standing crop of only 10 pounds per acre. The species found in these waters are spotted bass, largemouth bass, various sunfishes, crappie, catfish, bullheads, buffalo, carp, and numerous species of forage fish.

The farm ponds generally contain largemouth bass, bluegill and, in some cases, channel catfish. The pounds per acre vary from pond to pond depending on the management received in the past. The quality of the fishing also depends on the pond's management history.

Allen Parish also has many kinds of reptiles and amphibians, including cottonmouth moccasin, broadbanded water snake, coral snake, hognose snake, canebrake and pigmy rattlesnake, copperhead, Louisiana milk snakes, speckled kingsnake, rough green snake, buttermilk snake, five-lined skink, broadheaded skink, green anole, various turtles—smooth softshell, three-toed box, red-eared, and Mississippi mud turtles—marbled and smallmouth salamander, Fowler's and East Texas toads, spring peeper, Eastern tree toads, Northern cricket frog, Northern leopard frog, and bullfrog. These reptiles and amphibians have diverse habitat.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 9, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are texture of the surface layer, available water capacity, wetness, slope, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, and rice.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are texture of the surface layer, available water capacity, wetness, flood hazard, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, bahiagrass, bermudagrass, and clover.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are texture of the surface layer, available water capacity, wetness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are bluestem, paspalum, switchgrass, panicum, and lespedeza.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are the available water capacity and wetness. Examples of these plants are oak, poplar, sweetgum, sycamore, dogwood, hickory, blackberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are red mulberry, redbay, and mayhaw.

Coniferous plants furnish browse, seeds, and cones. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are available water capacity and wetness. Examples of coniferous plants are pine and cedar.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, and slope. Examples of wetland plants are smartweed, wild millet, wildrice, saltgrass, cordgrass, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are wetness, slope, and permeability. Examples of shallow water areas are waterfowl feeding areas and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. The wildlife attracted to these areas include bobwhite quail, meadowlark, field sparrow, cottontail, and red fox.

Habitat for woodland wildlife consists of areas of deciduous plants or coniferous plants or both and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, and deer.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, shore birds, muskrat, mink, and beaver.

engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. The ratings are given in the following tables: Building site development, Sanitary facilities, Construction materials, and Water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil properties" section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils *may be included within the mapped areas of a specific soil.*

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations need to be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to (1) evaluate the potential of areas for residential, commercial, industrial, and recreation uses; (2) make preliminary estimates of construction conditions; (3) evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; (4) evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; (5) plan detailed onsite investigations of soils and geology; (6) locate potential sources of gravel, sand, earthfill, and topsoil; (7) plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and (8) predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

building site development

Table 10 shows the degree and kind of soil limitations that affect shallow excavations, dwellings without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by a cemented pan, or a very firm or dense layer; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and the depth to the water table.

Dwellings and small commercial buildings are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrink-swell potential, and organic layers can cause the movement of footings. A high water table, slope, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 to 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material, a base of gravel, crushed rock, or stabilized soil material, and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to very compact layers, a high water table, flooding, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, and depth to a high water table affect the traffic supporting capacity.

sanitary facilities

Table 11 shows the degree and the kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

Table 11 also shows the suitability of the soils for use as daily cover for landfills. A rating of *good* indicates that soil properties and site features are favorable for the use and good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, and flooding affect absorption of the effluent.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if slope is excessive or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to effectively filter the effluent. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

Table 11 gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, flooding, and content of organic matter.

Excessive seepage due to rapid permeability of the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope can cause construction problems, and large stones can hinder compaction of the lagoon floor.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground water pollution. Ease of excavation and revegetation needs to be considered.

The ratings in table 11 are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, and flooding affect both types of landfill. Texture, highly organic layers, soil reaction, and content of salts and sodium affect trench type landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area type sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to soil blowing.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over the water table to permit revegetation. The soil material used as final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

construction materials

Table 12 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair, poor,* or *unsuited* as a source of roadfill, topsoil, sand, and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering properties provides detailed information about each soil layer. This information can help determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material and low shrink-swell potential. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have moderate shrink-swell potential or are wet. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10 and a high shrink-swell potential. They are wet, and the depth to the water table is less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and *gravel* are used in great quantities in many kinds of construction. The ratings in table 12 provide guidance as to where to look for probable sources and are based on the probability that soils in a given area contain sizable quantities of sand or gravel. A soil rated *good* or *fair* has a layer of suitable material at least 3 feet thick, the top of which is within a depth of 6 feet. Fine-grained soils are not suitable sources of sand and gravel.

The ratings do not take into account depth to the water table or other factors that affect excavation of the material. Descriptions of grain size, kinds of minerals, reaction, and stratification are given in the soil series descriptions and in table 14.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, bedrock, and toxic material.

Soils rated *good* have friable loamy material to a depth of at least 40 inches. They have little or no gravel and have slopes of less than 8 percent. They are naturally fertile or respond well to fertilizer and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils or loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have slopes of more than 15 percent, or have a seasonal water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

water management

Table 13 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed ponds. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives for each soil the restrictive features that affect drainage, irrigation, terraces and diversions, and grassed waterways.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; and susceptibility to flooding. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or to a cemented pan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, or sulfur. Availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock or to a cemented pan. The performance of a system is affected by the depth of the root zone and soil reaction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to reduce erosion and conserve moisture by intercepting runoff. Slope and wetness affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock or to a cemented pan affect the construction of grassed waterways. A hazard of wind erosion, low available water capacity, restricted rooting depth, toxic substances such as salts or sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

soil properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics. These results are reported in table 17.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classifications, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

engineering properties

Table 14 gives estimates of the engineering classification and of the range of properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under "Soil series and their morphology."

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If a soil contains particles coarser than sand, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (*2*) and the system adopted by the American Association of State Highway and Transportation Officials (*1*).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as Pt. Soils exhibiting engineering properties of two groups can have a dual classification, for example, SP-SM.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest. The AASHTO classification for soils tested, with group index numbers in parentheses, is given in table 17.

Rock fragments larger than 3 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

physical and chemical properties

Table 15 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems, septic tank absorption fields, and construction where the rate of water movement under saturated conditions affects behavior.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each major soil layer. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The change is based on the soil fraction less than 2 millimeters in diameter. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, greater than 9 percent, is sometimes used.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.05 to 0.69. The higher the value the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

soil and water features

Table 16 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils not protected by vegetation are assigned to one of four groups. They are grouped according to the intake of water when the soils are thoroughly wet and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Flooding, the temporary inundation of an area, is caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt and water in swamps and marshes are not considered flooding.

Table 16 gives the frequency and duration of flooding and the time of year when flooding is most likely.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, common, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions; *common* that it is likely under normal conditions; *occasional* that it occurs on an average of once or less in 2 years; and *frequent* that it occurs on an average of more than once in 2 years. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, and *long* if more than 7 days. Probable dates are expressed in months; November-May, for example, means that flooding can occur during the period November through May.

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and absence of distinctive horizons that form in soils that are not subject to flooding.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The depth to a seasonal high water table applies to undrained soils. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles in the soil. Indicated in table 16 are the depth to the seasonal high water table; the kind of water table—that is, perched, artesian, or apparent; and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in table 16.

An apparent water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. An artesian water table is under hydrostatic head, generally beneath an impermeable layer. When this layer is penetrated, the water level rises in an uncased borehole. A perched water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Only saturated zones within a depth of about 6 feet are indicated. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. The first numeral in the range indicates how high the water rises above the surface. The second numeral indicates the depth below the surface.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors creates a severe corrosion environment. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

engineering test data

Table 17 shows laboratory test data for several pedons sampled at carefully selected sites in the survey area. The pedons are typical of the series and are described in the section "Soil series and their morphology." The soil samples were tested by the Louisiana Department of Highways.

The testing methods generally are those of the American Association of State Highway and Transportation Officials (AASHTO) or the American Society for Testing and Materials (ASTM).

The tests and methods are: AASHTO classification (M-145-66); Unified classification (D-2487-66T); Mechanical analysis (T88-57); Liquid limit (T89-60); Plasticity index (T90-56); Moisture density, Method A (T99-57).

classification of the soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (*15, 4*). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. In table 18, the soils of the survey area are classified according to the system. The categories are defined in the following paragraphs.

ORDER. Ten soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Alfisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Aqualf (*Aqu*, meaning water, plus *alf*, from Alfisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Albaqualfs (*Alb*, meaning a light colored horizon at or near the surface, plus *aqualf*, the suborder of the Alfisols that have an aquic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Albaqualfs.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Mostly the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine, montmorillonitic, thermic Typic Albaqualfs.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The texture of the surface layer or of the substratum can differ within a series.

soil series and their morphology

In this section, each soil series recognized in the survey area is described. The descriptions are arranged in alphabetic order.

Characteristics of the soil and the material in which it formed are identified for each series. The soil is compared with similar soils and with nearby soils of other series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the Soil Survey Manual (*14*). Many of the technical terms used in the descriptions are defined in Soil Taxonomy (*15*). Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed soil map units."

Acadia series

The Acadia series consists of somewhat poorly drained, very slowly permeable soils. These soils formed in clayey alluvium mainly on low terraces of Pleistocene age in the southeastern part of the parish. They are on slightly convex slopes. In most years the water table is perched above the clayey Bt horizon, and the soil is saturated to within 6 inches of the surface in December through April. Slope is dominantly 1 percent or less but ranges to 2 percent.

Acadia soils are on the same landscape as Gore and Wrightsville soils. Gore soils, on convex ridges and side slopes, have an argillic horizon that is dominantly 3 or higher in chroma. Wrightsville soils, in lower positions, have an albic horizon tonguing into the B horizon and are dominantly gray throughout the solum.

Typical pedon of Acadia silt loam, 11 miles southeast of Oberlin, 4 miles south of Louisiana Highway 104, 2,500 feet west of Bayou Nezpique, 45 feet north of Parish Road 1-02, Spanish Land Grant sec. 41, T. 6 S., R. 2 W.

A1—0 to 4 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; few fine soft brown bodies; many fine and medium and few coarse roots; medium acid; abrupt smooth boundary.

A2—4 to 7 inches; light yellowish brown (10YR 6/4) silt loam; weak fine granular structure; friable; few fine discontinuous random tubular pores; few fine soft brown bodies; common fine and few medium roots; strongly acid; clear smooth boundary.

B1—7 to 14 inches; yellowish brown (10YR 5/6) silty clay loam; many medium distinct light brownish gray (10YR 6/2) mottles; weak medium subangular blocky structure; firm; few fine and medium roots; strongly acid; clear wavy boundary.

B2tg—14 to 28 inches; light brownish gray (10YR 6/2) silty clay; many medium distinct yellowish brown (10YR 5/6) and few fine prominent red (2.5YR 4/8) mottles; weak medium subangular blocky structure parting to moderate fine subangular blocky; firm; thin discontinuous clay films on surfaces of peds; few fine and medium roots; very strongly acid; clear wavy boundary.

B3g—28 to 58 inches; light brownish gray (10YR 6/2) silty clay; common medium distinct yellowish brown (10YR 5/6) and few medium distinct strong brown (7.5YR 5/6) mottles; moderate medium angular blocky structure; firm; thin discontinuous clay films on surfaces of peds; few fine soft brown bodies; few medium and coarse roots; very strongly acid; clear wavy boundary.

C1g—58 to 68 inches; light gray (10YR 6/1) silty clay; many coarse distinct strong brown (7.5YR 5/6) and few fine prominent red (2.5YR 4/8) mottles; massive; firm; few fine soft brown bodies; few fine roots; strongly acid.

Solum thickness ranges from 40 to 60 inches.

The A1 horizon has hue of 10YR, value of 4 or 5, and chroma of 1 to 3. It ranges from very strongly acid to medium acid.

The A2 horizon has hue of 10YR, value of 5 or 6, and chroma of 2 to 4 or hue of 2.5Y, value of 5, and chroma of 2. It ranges from very strongly acid to medium acid.

The B1 horizon has hue of 10YR, value of 5 or 6, and chroma of 4 to 8. Texture is silt loam or silty clay loam.

The Btg horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2; hue of 5Y, value of 5, and chroma of 1; or hue of 2.5Y, value of 5 or 6, and chroma of 2. Texture is silty clay or clay. Reaction ranges from very strongly acid to medium acid.

The B3 and C horizons have the same color range as the Btg horizon. Texture of the C horizon is clay, silty clay, or silty clay loam. Reaction ranges from very strongly acid to mildly alkaline.

Basile series

The Basile series consists of poorly drained, slowly permeable soils. These soils formed in loamy alluvium in drainageways on low terraces of Pleistocene age. Slope is less than 1 percent.

Basile soils are geographically closely associated with Guyton, Gore, and Wrightsville soils. Guyton soils are more acid, have siliceous mineralogy, and are at slightly higher elevations. Gore soils are on side slopes and have a fine control section. Wrightsville soils are more acid and have a fine control section.

Typical pedon of Basile silt loam, in an area of Basile and Guyton soils, frequently flooded, 10 miles southeast of Oberlin, 5.75 miles east of intersection of Louisiana Highway 26 and Louisiana Highway 104, 650 feet north of Louisiana Highway 104, 100 feet north of small drain, Spanish Land Grant sec. 30, T. 5 S., R. 2 W.

A1—0 to 3 inches; gray (10YR 5/1) silt loam; weak fine granular structure; friable; many fine and common medium roots; strongly acid; clear smooth boundary.

A21g—3 to 11 inches; grayish brown (10YR 5/2) silt loam; many medium distinct yellowish brown (10YR 5/6, 10YR 5/8) mottles; weak medium subangular blocky structure; friable; common fine discontinuous random tubular pores; common fine and few medium roots; few fine soft black bodies; strongly acid; clear wavy boundary.

A22g—11 to 19 inches; grayish brown (10YR 5/2) silt loam; common medium distinct yellowish brown (10YR 5/6, 10YR 5/8) mottles; moderate medium subangular blocky structure; friable; common fine discontinuous random tubular pores; few fine roots; strongly acid; clear irregular boundary.

B&A—19 to 27 inches; grayish brown (10YR 5/2) silty clay loam (B2t); 20 percent grayish brown (10YR 5/2) silt loam (A2); common coarse distinct yellowish brown (10YR 5/6) mottles; moderate coarse prismatic structure parting to moderate medium subangular blocky; firm; discontinuous distinct clay films on surfaces of peds; tongues of A2 material 3 to 4 inches wide extend to a depth of 27 inches; few fine roots; few fine soft red and black bodies; strongly acid; clear wavy boundary.

B21tg—27 to 35 inches; light brownish gray (2.5Y 6/2) silty clay loam; many medium distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; discontinuous distinct clay films on surfaces of peds; common fine discontinuous random tubular pores; few fine roots; moderately alkaline; clear wavy boundary.

B22tg—35 to 63 inches; light brownish gray (2.5Y 6/2) silty clay loam; common medium distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; firm; discontinuous distinct clay films on surfaces of peds; common coarse concretions of calcium carbonate; moderately alkaline; clear wavy boundary.

B3g—63 to 80 inches; light brownish gray (2.5Y 6/2) silt loam; common medium distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; firm; many coarse concretions of calcium carbonate; moderately alkaline.

Solum thickness ranges from 40 to 100 inches. Base saturation is more than 80 percent at 50 inches below the top of the B horizon.

The A1 horizon has hue of 10YR, value of 4 to 6, and chroma of 1. It is strongly acid to medium acid.

The A2 horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. It is strongly acid to medium acid.

The Btg horizon has hue of 10YR, 2.5Y, or 5Y, value of 5 or 6, and chroma of 1 or 2. Texture is silt loam or silty clay loam. Reaction ranges from medium acid to moderately alkaline.

The B3 horizon has the same colors as the Btg horizon. Texture is silt loam or silty clay loam. Reaction ranges from slightly acid to moderately alkaline.

Beauregard series

The Beauregard series consists of moderately well drained, slowly permeable soils. These soils formed in loamy alluvium mainly on upland terraces throughout the western half of the parish. Slope is dominantly about 3 percent but ranges from 1 to 3 percent.

Beauregard soils are geographically closely associated with Malbis, Cadeville, and Caddo soils. Cadeville soils are on side slopes and have a fine control section. Caddo soils are on higher lying broad flats and are gray throughout. Malbis soils are on higher lying ridges and on moderately sloping side slopes along drainageways. They have a fine-loamy control section.

Typical pedon of Beauregard silt loam, 1 to 3 percent slopes, approximately 4.5 miles north of Reeves, 0.75 mile east of Louisiana Highway 113, SW1/4NE1/4 sec. 25, T. 5 S., R. 7 W.

A1—0 to 4 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; very friable; few coarse and many fine roots; common fine fragments of charcoal; medium acid; clear wavy boundary.

A2—4 to 7 inches; pale brown (10YR 6/3) silt loam; common medium brown (10YR 4/3) mottles; weak fine granular structure; very friable; many fine and common medium roots; common fine discontinuous random tubular pores; common fine concretions of iron and manganese oxides; many fine fragments of charcoal; strongly acid; clear wavy boundary.

B1—7 to 14 inches; yellowish brown (10YR 5/6) silt loam; few fine faint pale brown mottles; weak medium subangular blocky structure; friable; common fine roots; common fine discontinuous random tubular pores; common medium concretions of iron and manganese oxides; strongly acid; clear wavy boundary.

B21t—14 to 25 inches; yellowish brown (10YR 5/6) silty clay loam; common medium distinct light brownish gray (10YR 6/2) and common medium faint yellowish brown (10YR 5/8) mottles; moderate coarse subangular blocky structure; firm; few fine roots; common medium discontinuous random tubular pores; discontinuous thin clay films on surfaces of peds; common medium concretions of iron and manganese oxides; strongly acid; gradual wavy boundary.

B22t—25 to 45 inches; yellowish brown (10YR 5/6) silty clay loam; many medium distinct light brownish gray (10YR 6/2) and many coarse prominent red (2.5YR 4/8) mottles; weak coarse prismatic structure parting to moderate coarse subangular blocky; yellowish brown and light brownish gray material is friable; red material is firm and brittle and constitutes 25 percent of the volume; common fine roots; many fine and medium discontinuous random tubular pores; discontinuous thick clay films on surfaces of peds; common medium concretions of iron and manganese oxides; about 15 percent plinthite; very strongly acid; gradual wavy boundary.

B23t—45 to 65 inches; light brownish gray (10YR 6/2) silty clay loam; many coarse distinct yellowish brown (10YR 5/6) and few medium prominent red (2.5YR 4/8) mottles; weak coarse prismatic structure parting to moderate coarse subangular blocky; firm; few fine roots in gray seams; many fine and medium discontinuous random tubular pores; continuous distinct clay films on surfaces of peds; very strongly acid.

Solum thickness ranges from 60 to 90 inches. Depth to horizons that contain more than 5 percent plinthite ranges from 20 to 40 inches. Mottles having chroma of 2 or less are at depths of 12 to 30 inches.

The A1 or Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 1 to 3. It ranges from strongly acid to slightly acid.

The A2 horizon has hue of 10YR, value of 4 to 6, and chroma of 3 or 4. It ranges from strongly acid to slightly acid.

The upper part of the Bt horizon has hue of 10YR, value of 5 or 6, and chroma of 3 to 6. Some faces of peds have chroma of less than 3. The lower part of the Bt horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. It is silt loam or silty clay loam. The Bt horizon is mottled in shades of red, brown, and gray. It ranges from very strongly acid to medium acid.

Bienville series

The Bienville series consists of somewhat excessively drained soils of moderately rapid permeability. These soils formed in sandy alluvium on ridges on stream terraces along the Calcasieu River and Whiskey Chitto Creek and their tributaries. Slopes range from 1 to 5 percent.

Bienville soils are geographically closely associated with Cahaba and Guyton soils. Cahaba soils are in lower positions and are fine-loamy. Guyton soils are in lower positions. They are on flats and in drainageways, are gray throughout, and are fine-silty.

Typical pedon of Bienville loamy fine sand, 1 to 5 percent slopes, 3 miles northwest of Oakdale, 1.5 miles south of blacktop road, SW1/4SW1/4 sec. 21, T. 2 S., R. 3 W.

A1—0 to 7 inches; brown (10YR 4/3) loamy fine sand; weak fine granular structure; very friable; common fine roots; few fragments of charcoal; medium acid; clear wavy boundary.

A2—7 to 20 inches; dark yellowish brown (10YR 4/4) loamy fine sand; massive; very friable; common fine roots and few coarse roots; few fragments of charcoal; light yellowish brown streaks 10 to 15 millimeters wide; medium acid; clear wavy boundary.

B&A—20 to 37 inches; strong brown (7.5YR 5/6) loamy fine sand (B2t); weak fine subangular blocky structure; very friable; common medium roots; few sand grains bridged with clay (A2); few fragments of charcoal; 30 percent of horizon is very pale brown spots and streaks of uncoated sand grains; medium acid; clear wavy boundary.

B21t—37 to 55 inches; strong brown (7.5YR 5/6) loamy fine sand; weak fine subangular blocky structure; very friable; pale brown spots of uncoated sand grains; few sand grains bridged with clay; medium acid; clear smooth boundary.

B22t—55 to 72 inches; strong brown (7.5YR 5/6) loamy fine sand; many medium distinct brown (7.5YR 4/4) and few fine distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; very friable; common lamellae 1 to 3 centimeters thick and pale brown sand streaks throughout the horizon; medium acid.

Solum thickness ranges from 60 to 80 inches.

The A1 horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4. It ranges from very strongly acid to medium acid.

The A2 horizon has hue of 10YR, value of 4 to 6, and chroma of 3 or 4. It ranges from very strongly acid to medium acid.

The Bt horizon has hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 5 or 6. Some pedons have subhorizons of the B horizon with hue of 10YR or chroma of 4. Streaks of A2 material make up 15 to 40 percent of the B&A horizon. Texture is fine sandy loam, loamy fine sand, or fine sand. In some pedons the lower Bt horizons contain lamellae that are dark reddish brown, reddish brown, or brown. The Bt horizon ranges from very strongly acid to medium acid.

Caddo series

The Caddo series consists of poorly drained, slowly permeable soils. These soils formed in loamy alluvium on broad flats on upland terraces of Pleistocene age. Slopes range from 0 to 1 percent.

Caddo soils are on the same landscape with Beauregard, Glenmora, Guyton, and Messer soils. The somewhat poorly drained Beauregard soils are in slightly higher positions. The moderately well drained Glenmora soils have more slope and are in slightly lower positions. Guyton soils are in lower positions and do not have plinthite. Messer soils have higher chroma and are on low circular mounds.

Typical pedon of Caddo silt loam in an area of Caddo-Messer complex, 4.5 miles southeast of Mittie, 2.2 miles south of Louisiana Highway 26 on Turner Road extension, 30 feet west of road, SE1/4SW1/4 sec. 3, T. 5 S., R. 5 W.

A1—0 to 4 inches; grayish brown (10YR 5/2) silt loam; weak fine granular structure; friable; few coarse and common medium roots; few fine iron and manganese concretions; very strongly acid; clear smooth boundary.

A21g—4 to 10 inches; light brownish gray (10YR 6/2) silt loam; few fine distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; common very fine and few fine discontinuous random tubular pores; common medium and few coarse roots; common fine and medium concretions; very strongly acid; clear wavy boundary.

A22g—10 to 21 inches; light brownish gray (10YR 6/2) silt loam; common medium distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; about 40 percent massive; firm and brittle; many fine and very fine discontinuous random tubular pores; few very fine and fine roots; few fine and medium concretions and few soft black bodies; very strongly acid; abrupt irregular boundary.

B21tg—21 to 28 inches; light brownish gray (10YR 6/2) silty clay loam; many coarse prominent red (2.5YR 5/8) mottles; weak medium prismatic structure parting to moderate medium subangular blocky; firm; common fine continuous random tubular pores; few very fine and fine roots; discontinuous distinct clay films on surfaces of peds; gray tongues of silt loam material 5 to 15 centimeters wide extending to a depth of 26 inches; less than 5 percent plinthite; common medium black soft bodies; very strongly acid; clear irregular boundary.

B22tg—28 to 38 inches; light brownish gray (10YR 6/2) silty clay loam; common medium prominent red (2.5YR 4/8), common coarse distinct yellowish brown (10YR 5/6), and few fine distinct strong brown (7.5YR 5/8) mottles; weak medium prismatic structure parting to moderate medium subangular blocky; firm; common fine discontinuous random tubular pores; few very fine and fine roots; discontinuous distinct gray clay films on surfaces of peds; few small pockets of silt loam; less than 5 percent plinthite; soft black bodies; very strongly acid; clear wavy boundary.

B23t—38 to 61 inches; light brownish gray (10YR 6/2) silty clay loam; common coarse distinct yellowish brown (10YR 5/6) and few fine distinct pale brown (10YR 6/3) mottles; moderate medium subangular blocky structure; firm; common fine discontinuous random tubular pores; discontinuous distinct clay films on surfaces of peds; strongly acid.

Solum thickness ranges from 60 to 100 inches. Reaction ranges from medium acid to very strongly acid throughout.

The A1 horizon has hue of 10YR, value of 5, and chroma of 2 or value of 4 and chroma of 1 or 2.

The A2g horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2 or hue of 2.5Y, value of 5, and chroma of 2.

The Btg horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2 or hue of 2.5Y, value of 5, and chroma of 2. It is mottled in yellow, brown, and red. Texture is silt loam, loam, or silty clay loam.

Cadeville series

The Cadeville series consists of moderately well drained, very slowly permeable soils that formed in clayey alluvium. These soils are on very gently sloping to gently sloping side slopes of upland terraces of Pleistocene age. Slopes range from 1 to 5 percent. The seasonal high water table is at a depth of more than 6 feet.

Cadeville soils are geographically closely associated with Beauregard and Malbis soils. Beauregard soils are at higher elevations and have a fine-silty control section. Malbis soils are at higher elevations and have a fine-loamy control section.

Typical pedon of Cadeville very fine sandy loam, 1 to 5 percent slopes, 2.3 miles northwest of Mittie, 1.75 miles north of intersection of Louisiana Highway 26 and Parish Road 4-08, 600 feet west of Parish Road 4-08, NE1/4SW1/4 sec. 6, T. 4 S., R. 5 W.

A1—0 to 2 inches; dark brown (10YR 4/3) very fine sandy loam; weak fine granular structure; friable; few fine roots; many fine concretions; strongly acid; clear smooth boundary.

A2—2 to 5 inches; brown (10YR 5/3) very fine sandy loam; common medium distinct dark brown (10YR 3/3) mottles; weak fine granular structure; friable; few fine roots; strongly acid; abrupt smooth boundary.

B21t—5 to 10 inches; yellowish red (5YR 4/6) silty clay; moderate medium subangular blocky structure; firm; few common roots; discontinuous distinct clay films on surfaces of peds; very strongly acid; clear wavy boundary.

B22t—10 to 27 inches; yellowish red (5YR 4/6) silty clay; many medium prominent red (2.5YR 4/6) mottles; common medium distinct yellowish brown (10YR 5/6) and few fine distinct light brownish gray (10YR 6/2) mottles; moderate medium subangular blocky structure; firm; discontinuous distinct clay films on surfaces of peds; very strongly acid; gradual smooth boundary.

B23t—27 to 39 inches; mottled yellowish brown (10YR 5/6), light brownish gray (10YR 6/2), gray (10YR 6/1), and red (2.5YR 4/6) silty clay; moderate fine subangular blocky structure; firm; discontinuous distinct clay films on surfaces of peds; very strongly acid; clear smooth boundary.

B3—39 to 45 inches; brown (7.5YR 5/4) silty clay loam; weak fine subangular blocky structure; firm; patchy thin clay films on surfaces of peds; very strongly acid; clear smooth boundary.

C—45 to 65 inches; light brownish gray (10YR 6/2) and yellowish brown (10YR 5/6) silty clay loam; massive; firm; strongly acid.

Solum thickness ranges from 40 to 60 inches.

The A1 horizon has hue of 10YR, value of 3 to 6, and chroma of 2 to 4. It is strongly acid to extremely acid.

The A2 horizon has hue of 10YR, value of 5 or 6, and chroma of 2 to 4.

The B2 horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 4 to 8. Texture is silty clay or clay. The lower part of the B2 horizon is mottled in shades of brown, gray, or yellow and red. The B2 horizon is silty clay loam, silty clay, or clay. It ranges from strongly acid to extremely acid.

The C horizon is silty clay loam, silty clay, or clay. It ranges from strongly acid to extremely acid.

Cahaba series

The Cahaba series consists of well drained, moderately permeable soils. These soils formed in loamy alluvium on local stream terraces of late Pleistocene age. Slopes range from 1 to 3 percent.

Cahaba soils are geographically closely associated with Bienville and Guyton soils. Bienville soils are on higher ridges and have a sandy control section. The poorly drained Guyton soils are in lower lying depressed areas and are grayer throughout.

Typical pedon of Cahaba fine sandy loam, 1 to 3 percent slopes, 5 miles west of Oberlin, 0.25 mile west of Calcasieu River, 1 1/4 miles southeast of Louisiana Highway 26, NE1/4NE1/4 sec. 11, T. 5 S., R. 5 W.

A1—0 to 5 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak fine granular structure; friable; common fine roots; few fragments of charcoal; strongly acid; clear wavy boundary.

A&B—5 to 10 inches; pale brown (10YR 6/3) fine sandy loam (A2); about 40 percent yellowish red (5YR 5/6) (B2); weak fine granular structure; friable; common fine roots; few fine discontinuous random tubular pores; strongly acid; clear smooth boundary.

B21t—10 to 20 inches; yellowish red (5YR 4/6) clay loam; weak medium subangular blocky structure; friable; common fine roots; continuous distinct clay films on surfaces of peds; very strongly acid; gradual smooth boundary.

B22t—20 to 40 inches; yellowish red (5YR 5/6) sandy clay loam; moderate medium subangular blocky structure; firm; few very fine roots; discontinuous distinct clay films on surfaces of peds; few soft red bodies (2.5YR 4/6); few concretions of iron and manganese oxides; very strongly acid; gradual wavy boundary.

B3—40 to 48 inches; yellowish red (5YR 5/6) fine sandy loam; weak fine subangular blocky structure; friable; few very fine roots; few pale brown (10YR 6/3) sand grains coated with clay; very strongly acid; clear wavy boundary.

C1—48 to 65 inches; yellowish red (5YR 4/6) and very pale brown (10YR 7/4) stratified loamy sand and fine sandy loam; massive; friable; very strongly acid.

Solum thickness ranges from 36 to 60 inches. Reaction ranges from medium acid to very strongly acid throughout the solum.

The A1 or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 2 to 4.

The A2 horizon, where present, has hue of 10YR, value of 5 or 6, and chroma of 2 to 4.

The Bt horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 to 8. Texture is sandy clay loam, loam, or clay loam. Clay content averages about 25 percent in the control section. The content of silt is 20 to 50 percent.

The B3 horizon, where present, has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 to 8. In some pedons, this horizon is mottled in shades of yellow and brown. Texture is fine sandy loam or sandy loam.

The C horizon ranges in hue from 10YR to 2.5YR, value of 4 or 5, and chroma of 4 to 8. It is commonly stratified with sand, loamy sand, and fine sandy loam. In some pedons, few to common flakes of mica are in the lower horizons.

Cascilla series

The Cascilla series consists of well drained, moderately permeable soils that formed in silty alluvium. These soils are on flood plains along drainageways. They are frequently flooded. Slope is dominantly less than 1 percent.

Cascilla soils are geographically closely associated with Guyton soils. The poorly drained Guyton soils are at lower elevations and are gray throughout.

Typical pedon of Cascilla silt loam in an area of Guyton and Cascilla soils, frequently flooded, 4.5 miles northwest of Oakdale, 150 feet south of Parish Road 5-02, 40 feet east of Cherrywinche Creek, SW1/4SE1/4 sec. 17, T. 2 S., R. 3 W.

A1—0 to 6 inches; brown (10YR 4/3) silt loam; few medium faint grayish brown (10YR 5/2) mottles; weak fine granular structure; very friable; few coarse and common medium roots; few soft brown bodies; strongly acid; clear smooth boundary.

B1—6 to 12 inches; dark yellowish brown (10YR 4/4) silt loam; weak medium subangular blocky structure; very friable; common very fine and few fine discontinuous random tubular pores; common fine roots; soft brown bodies; very strongly acid; clear wavy boundary.

B21—12 to 23 inches; yellowish brown (10YR 5/4) silt loam; common medium faint pale brown (10YR 6/3) mottles; weak medium subangular blocky structure; very friable; common fine discontinuous random tubular pores; few medium and fine roots; few worm casts; very strongly acid; clear wavy boundary.

B22—23 to 39 inches; dark yellowish brown (10YR 4/4) silt loam; few fine faint brown mottles; moderate medium subangular blocky structure; friable; many medium discontinuous random tubular pores; few medium roots; few worm casts; very strongly acid; clear wavy boundary.

B23—39 to 51 inches; yellowish brown (10YR 5/4) silt loam; many fine faint pale brown mottles; moderate medium subangular blocky structure; friable; many medium discontinuous random tubular pores; common fine soft dark bodies; very strongly acid; clear wavy boundary.

B3—51 to 66 inches; yellowish brown (10YR 5/4) silt loam; many medium distinct light brownish gray (10YR 6/2) mottles; weak medium subangular blocky structure; friable; common medium soft brown bodies; very strongly acid; clear wavy boundary.

Solum thickness ranges from 45 to 80 inches. Reaction is strongly acid to very strongly acid throughout.

The A1 has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 or 4.

The B2 horizon has hue of 7.5YR or 10YR, value of 4 or 5, chroma of 3 or 4. In some pedons, it has grayish mottles below a depth of 24 inches. Texture is silt loam or silty clay loam.

The B3 horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 6. In most pedons, it has grayish mottles. Texture is silt loam or silty clay loam.

Crowley series

The Crowley series consists of somewhat poorly drained, very slowly permeable soils. These soils formed in clayey alluvium on broad flats on low terraces of Pleistocene age. Slopes are dominantly less than 1 percent but range up to 3 percent. The water table is at a depth of 1.5 feet to 0.5 foot in December through April.

Crowley soils are geographically closely associated with Frost, Kinder, Mamou, and Vidrine soils. Frost and Kinder soils are at lower elevations, have tongues of albic material extending into the argillic horizon, and have a fine-silty control section. Mamou soils are on slopes adjacent to abandoned stream channels and are browner in color. Vidrine soils are on low mounds in a complex with Crowley soils and have higher chroma.

Typical pedon of Crowley silt loam in an area of Crowley-Vidrine complex, 7.5 miles southeast of Oberlin on Louisiana Highway 26, 0.3 mile west on Parish Road 1-21, 20 feet east of gravel road, SE1/4NW1/4 sec. 33, T. 5 S., R. 3 W.

Ap—0 to 6 inches; dark brown (10YR 4/3) silt loam; few fine distinct grayish brown (10YR 5/2) mottles; weak fine granular structure; friable; strongly acid; clear smooth boundary.

A21g—6 to 13 inches; grayish brown (10YR 5/2) silt loam; massive; firm; few fine discontinuous random tubular pores; many fine distinct yellowish brown (10YR 5/8) oxidation stains around root channels; strongly acid; clear smooth boundary.

A22g—13 to 21 inches; grayish brown (10YR 5/2) silt loam; few fine discontinuous random tubular pores; common medium distinct light gray (10YR 7/1) ped coatings, and common medium distinct dark yellowish brown (10YR 4/4) oxidation stains around root channels; massive; firm; few fine and medium concretions of iron and manganese oxides; strongly acid; abrupt wavy boundary.

B21tg—21 to 40 inches; dark gray (10YR 4/1) silty clay; many medium prominent red (2.5YR 4/8) mottles; moderate medium angular blocky structure that parts to moderate fine subangular blocky; firm; continuous distinct clay films on surfaces of peds; most surfaces of peds are coated with gray (10YR 5/1) silt loam; few fine distinct yellowish brown (10YR 5/8) soft bodies; few fine concretions of iron and manganese oxides; medium acid; gradual wavy boundary.

B22tg—40 to 46 inches; grayish brown (10YR 5/2) silty clay; common medium prominent yellowish red (5YR 5/6) mottles; moderate medium subangular blocky structure; firm; discontinuous distinct clay films on surfaces of peds; surfaces of peds have both continuous and discontinuous dark gray coatings; medium acid; gradual wavy boundary.

B23tg—46 to 57 inches; grayish brown (10YR 5/2) silty clay; common medium distinct yellowish brown (10YR 5/6) mottles; few fine distinct gray (10YR 5/1) mottles; moderate medium subangular blocky structure; firm; slightly acid; gradual wavy boundary.

B3g—57 to 74 inches; grayish brown (2.5Y 5/2) silty clay loam; few fine distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; slightly acid.

Solum thickness ranges from 40 to 75 inches.

The A1 and Ap horizons have hue of 10YR, value of 4 or 5, and chroma of 1 or 2. Reaction ranges from very strongly acid to medium acid.

The A2g horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or value of 5 and chroma of 2. It is very strongly acid to medium acid.

The Btg horizon has hue of 10YR, value of 4 to 6, and chroma of 1 or value of 5 and chroma of 2. Texture is silty clay or silty clay loam. Reaction ranges from very strongly acid to slightly acid.

The B3g horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2 or hue of 2.5Y, value of 5, and chroma of 2. Texture is silty clay loam or silty clay. Reaction ranges from medium acid to moderately alkaline.

Frost series

The Frost series consists of poorly drained, slowly permeable soils. These soils formed in loamy alluvium on broad flats and along drainageways mainly on low terraces of late Pleistocene age. Slopes are less than 1 percent.

Frost soils are geographically closely associated with Crowley, Guyton, Kinder, and Vidrine soils. Crowley soils are at higher elevations on nearly level slopes and have a fine textured control section. Guyton and Kinder soils have siliceous mineralogy. Vidrine soils are on pimple mounds and have a coarse-silty over clayey control section.

Typical pedon of Frost silt loam, 2.3 miles southwest of Kinder, 1.2 miles west of U.S. Highway 165 on blacktop road, 72 feet west of field access road, 25 feet north of blacktop, SE1/4SW1/4 sec. 9, T. 7 S., R. 5 W.

Ap—0 to 6 inches; grayish brown (10YR 5/2) silt loam; few fine distinct light gray silt coatings and yellowish brown organic oxidation stains in root channels; weak fine granular structure; friable; medium acid; clear smooth boundary.

A2—6 to 18 inches; light brownish gray (10YR 6/2) silt loam; weak fine granular structure; friable; common very fine discontinuous random tubular pores; many root channels coated with light gray and gray silt; medium acid; gradual irregular boundary.

B&A—18 to 30 inches; gray (10YR 6/1) silt loam; many medium distinct yellowish brown (10YR 5/6) mottles; tongues of grayish brown silt loam make up about 25 percent of the horizon; moderate medium subangular blocky structure; friable; common medium discontinuous random tubular pores; discontinuous dark gray thin clay films on surfaces of peds and in root channels; medium acid; gradual wavy boundary.

B21tg—30 to 46 inches; grayish brown (10YR 5/2) silt loam; few medium distinct yellowish brown (10YR 5/6) mottles; pockets of light gray and streaks of dark gray silt loam; moderate medium subangular blocky structure; friable; common fine discontinuous random tubular pores; patchy distinct thin dark gray clay films on surfaces of peds; medium acid; gradual wavy boundary.

B22tg—46 to 56 inches; light brownish gray (10YR 6/2) silty clay loam; few medium distinct yellowish brown (10YR 5/6) mottles and common fine distinct gray (10YR 6/1) mottles; weak medium subangular blocky structure; firm; discontinuous distinct thin dark gray clay films on surfaces of peds; medium acid; gradual wavy boundary.

B23tg—56 to 65 inches; light brownish gray (2.5Y 6/2) silty clay loam; few medium distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; friable; patchy distinct thin dark gray clay films on surfaces of peds; common medium distinct gray silt loam streaks and pockets; slightly acid; gradual irregular boundary.

Solum thickness ranges from 48 to 70 inches.

The A1 or Ap horizon has hue of 10YR, value of 4, and chroma of 1 or 2 or value of 5 and chroma of 2. It ranges from very strongly acid to slightly acid.

The A2 horizon has hue of 10YR, value of 4 to 6, and chroma of 1 or 2. It ranges from very strongly acid to slightly acid.

The Btg horizon has hue of 10YR, 2.5Y, or 5Y, value of 5 or 6, and chroma of 1 or 2. Texture is silty clay loam or silt loam. The horizon ranges from very strongly acid to medium acid in the upper part and from strongly acid to moderately alkaline in the lower part.

Glenmora series

The Glenmora series consists of moderately well drained, slowly permeable soils. These soils formed in loamy alluvium on nearly level to very gently sloping ridges and side slopes mainly on upland terraces of Pleistocene age. Slopes range from 1 to 3 percent.

Glenmora soils are geographically closely associated with Caddo, Guyton, Kinder, and Messer soils. Caddo soils are gray throughout and are on more level slopes in higher positions. Guyton and Kinder soils are gray throughout and are at lower elevations. Messer soils have thick silt loam B1 horizons and are on low circular mounds.

Typical pedon of Glenmora silt loam, 1 to 3 percent slopes, 2.5 miles northwest of Oakdale, 1 mile north of Louisiana Highway 10, 300 feet east of blacktop road, and 60 feet south of gravel road, SW1/4NE1/4 sec. 32, T. 2 S., R. 3 W.

A1—0 to 5 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; few coarse and common fine roots; few fine dark brown and black concretions; medium acid; clear smooth boundary.

A2—5 to 8 inches; brown (10YR 5/3) silt loam; weak medium subangular blocky structure; friable; few fine roots; few discontinuous random irregular pores; few fine concretions; medium acid; clear smooth boundary.

B1—8 to 12 inches; yellowish brown (10YR 5/6) silt loam; few fine faint yellowish brown (10YR 5/8) mottles; weak medium subangular blocky structure; friable; few fine roots; few discontinuous random irregular pores; few fine iron concretions; strongly acid; clear wavy boundary.

B21t—12 to 23 inches; yellowish brown (10YR 5/6) silty clay loam; common medium prominent red (2.5YR 4/8) and common fine faint yellowish brown (10YR 5/8) mottles; moderate coarse subangular blocky structure; friable; few fine roots; few discontinuous random irregular pores; discontinuous distinct clay films on surfaces of peds; few fine manganese concretions; few soft red bodies; strongly acid; clear wavy boundary.

B&A—23 to 31 inches; light brownish gray (10YR 6/2) silty clay loam (B2t); many medium prominent red (2.5YR 4/8) and common medium distinct yellowish brown (10YR 5/8) mottles; moderate coarse subangular blocky structure; firm; common medium discontinuous irregular pores; about 15 percent light brownish gray silt coatings about 2 millimeters thick on surfaces of some peds (A2); patchy thin clay films on surfaces of peds; few fine manganese concretions; about 3 percent plinthite; medium acid; clear wavy boundary.

B22t—31 to 42 inches; light brownish gray (10YR 6/2) silty clay loam; many medium prominent red (2.5YR 4/8) and common medium distinct yellowish brown (10YR 5/8) mottles; moderate coarse subangular blocky structure; firm; few fine discontinuous random irregular pores; discontinuous distinct clay films on surfaces of peds; about 3 percent plinthite; medium acid; clear wavy boundary.

B23t—42 to 64 inches; light brownish gray (10YR 6/2) silty clay loam; many common distinct yellowish brown (10YR 5/8) and few fine prominent red mottles; moderate coarse subangular blocky structure; firm; few fine discontinuous random irregular pores; discontinuous thin clay films on surfaces of peds; few fine manganese concretions; medium acid.

Solum thickness ranges from 60 to 100 inches. Reaction ranges from medium acid to very strongly acid throughout. Content of plinthite is less than 5 percent by volume.

The A1 horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3.

The A2 horizon has hue of 10YR, value of 5, and chroma of 2 or 3.

The upper part of the Bt horizon has hue of 10YR, value of 5, and chroma of 3 to 6 or hue of 7.5YR, value of 5, and chroma of 6. Texture is silt loam or silty clay loam. The lower part has hue of 10YR, value of 5 or 6, and chroma of 1 or 2. Texture is silty clay loam. The Bt horizon is mottled in shades of gray, grayish brown, or red.

Gore series

The Gore series consists of moderately well drained, very slowly permeable soils. These soils formed in clayey alluvium on stream terraces of Pleistocene age. Slopes range from 1 to 5 percent.

Gore soils are geographically closely associated with Acadia and Basile soils. Acadia soils are on more level areas and are not so well drained. Basile soils are on lower elevations, are gray throughout, and are subject to flooding.

Typical pedon of Gore very fine sandy loam, 1 to 5 percent slopes, 3.5 miles southeast of Soileau, 1.6 miles north of Parish Road 1-02, approximately 200 feet northwest of creek dump crossing, Spanish Land Grant sec. 39, T. 6 S., R. 2 W.

A1—0 to 3 inches; dark grayish brown (10YR 4/2) very fine sandy loam; weak fine subangular blocky structure; friable; common fine and medium roots; medium acid; clear wavy boundary.

A2—3 to 6 inches; brown (10YR 5/3) silt loam; weak fine subangular blocky structure; friable; common fine and medium roots; common fine discontinuous random tubular pores; medium acid; clear wavy boundary.

B21t—6 to 14 inches; red (2.5YR 4/6) silty clay; common medium distinct light yellowish brown (10YR 6/4) mottles; moderate medium subangular blocky structure; firm; few fine roots; patchy distinct clay films on surfaces of peds; strongly acid; gradual wavy boundary.

B22t—14 to 25 inches; red (2.5YR 4/6) silty clay; common medium distinct yellowish brown (10YR 5/6) and few medium distinct light yellowish brown (10YR 6/4) mottles; moderate medium subangular blocky structure; firm; patchy distinct clay films vertically oriented on surfaces of peds; strongly acid; gradual wavy boundary.

B23t—25 to 37 inches; light brownish gray (10YR 6/2) silty clay; many common prominent red (2.5YR 4/8) and medium distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm; patchy distinct clay films on some ped surfaces; slightly acid; gradual wavy boundary.

B3—37 to 45 inches; reddish brown (5YR 4/4) clay; common medium distinct light brownish gray (10YR 6/2) mottles; weak medium subangular blocky structure; very firm; common fine and medium manganese concretions; some sulfate (barium sulfate) salt present as white crystals; neutral; gradual wavy boundary.

C—45 to 92 inches; reddish brown (5YR 4/4) clay; few medium distinct light yellowish brown (10YR 6/2) mottles between some slickensides and pressure faces; massive; firm; common concretions of calcium carbonate that effervesce strongly with hydrochloric acid; mildly alkaline.

Solum thickness ranges from 40 to 60 inches.

The A1 horizon has hue of 10YR, value of 4 or 5, and chroma of 2. It is medium acid to strongly acid.

The A2 horizon has hue of 10YR, value of 5 or 6, and chroma of 3. It is medium acid to strongly acid.

The upper part of the Bt horizon has hue of 2.5YR, value of 4, and chroma of 6 or hue of 5YR, value of 5, and chroma of 6. It is strongly acid to very strongly acid. The lower part of the Bt horizon has hue of 10YR, value of 6, and chroma of 1 or 2. It ranges from strongly acid to neutral. Texture of the Bt horizon is silty clay or clay. Mottles are in shades of red, brown, and gray.

The B3 and C horizons range from medium acid to mildly alkaline.

Gore soils in Allen Parish are a taxadjunct to the Gore series. They contain about 5 percent more sand in the A1 horizon and have engineering properties slightly different than the defined range for the series, but these differences do not alter their use and behavior.

Guyton series

The Guyton series consists of poorly drained and very poorly drained, slowly permeable soils that formed in loamy alluvium. These soils are in broad depressions and in drainageways on flood plains on upland terraces of Pleistocene age. Slopes are less than 1 percent.

Guyton soils are geographically closely associated with Basile, Bienville, Caddo, Cahaba, Cascilla, Glenmora, Kinder, and Messer soils. Basile soils are at slightly lower elevations and are more alkaline. Bienville and Cahaba soils are at higher elevations and have sandy and fine-loamy control sections respectively. Caddo soils are at higher elevations and have prominent red mottles. Cascilla soils are in slightly higher positions and are better drained. Messer soils are in higher positions and have a higher chroma throughout and a coarse-silty control section. Glenmora soils are on higher lying ridges and side slopes and have higher chroma.

Typical pedon of Guyton silt loam, in an area of Guyton-Messer complex, 4.3 miles west of Oakdale, 2.3 miles southwest of Louisiana Highway 10, 200 feet east of East Belvin Road, SW1/4NW1/4 sec. 7, T. 3 S., R. 3 W.

A1—0 to 4 inches; grayish brown (10YR 5/2) silt loam; weak fine granular structure; friable; few coarse roots and common medium roots; few medium concretions of iron and manganese oxides; oxidation around root channels; very strongly acid; clear smooth boundary.

A21g—4 to 10 inches; light brownish gray (10YR 6/2) silt loam; common medium distinct yellowish brown (10YR 5/6) and few fine faint grayish brown mottles; weak medium subangular blocky structure; friable; few medium and few fine roots; common very fine continuous random tubular pores; few fine concretions of iron and manganese oxides; oxidation around root channels; very strongly acid; clear wavy boundary.

A22g—10 to 21 inches; light brownish gray (10YR 6/2) silt loam; common coarse distinct yellowish brown (10YR 5/6) and common medium distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; few fine roots; many very fine continuous random tubular pores; few fine and medium concretions of iron and manganese oxides; oxidation around roots; very strongly acid; clear irregular boundary.

B&A—21 to 38 inches; gray (10YR 6/1) silty clay loam (B2); common medium distinct yellowish brown (10YR 5/6), few fine distinct light yellowish brown (10YR 6/4), and few distinct strong brown (7.5YR 5/6) mottles; moderate coarse prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; common fine continuous random tubular pores; discontinuous distinct clay films on surfaces of peds; few fine concretions of iron and manganese oxides; ped coatings and pockets and tongues of light brownish gray (10YR 6/2) silt loam (A2) make up about 15 percent of the horizon; strongly acid; clear wavy boundary.

B21tg—38 to 60 inches; light brownish gray (10YR 6/2) silty clay loam; common coarse distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; few medium roots; few very fine discontinuous random tubular pores; discontinuous distinct clay films on surfaces of peds; few concretions of iron and manganese oxides; oxidation in root channels; strongly acid.

Solum thickness ranges from 52 to 80 inches.

The A1 and Ap horizons have hue of 10YR, value of 4 or 5, and chroma of 2 or 3 or hue of 2.5Y, value of 6, and chroma of 2. It ranges from extremely acid to medium acid.

The A2g horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2 or hue of 2.5Y, value of 6, and chroma of 2. It ranges from extremely acid to medium acid.

The Btg horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2 or hue of 2.5Y, value of 6, and chroma of 2. Texture is silt loam, silty clay loam, or clay loam. Reaction ranges from extremely acid to medium acid. Few to many mottles are in shades of brown or gray.

Kinder series

The Kinder series consists of deep, poorly drained, slowly permeable soils that formed in loamy alluvium. These soils are on broad, level or nearly level coastal prairies. Surface runoff is slow or very slow. Slope is 0 to 1 percent.

Kinder soils are geographically closely associated with Crowley, Frost, Glenmora, Guyton, Messer, Vidrine, and Wrightsville soils. Crowley soils are in similar positions and have an abrupt texture change and a fine textured control section. Frost and Guyton soils are at lower elevations and do not have red mottles. Glenmora soils are better drained and are at slightly lower elevations. Messer and Vidrine soils are better drained and are on convex mounds. Wrightsville soils have a finer textured B horizon and are at slightly lower elevations.

Typical pedon of Kinder silt loam, in an area of Kinder-Messer complex, 0.5 mile northwest of Kinder, 300 feet north of Kinder Hospital, NW1/4NW1/4 sec. 35, T. 6 S., R. 5 W.

Ap—0 to 7 inches; grayish brown (10YR 5/2) silt loam; weak fine granular structure; friable; few fine roots; brown (10YR 4/3) stains on surfaces of peds; medium acid; clear smooth boundary.

A2g—7 to 17 inches; light brownish gray (10YR 6/2) silt loam; common medium distinct yellowish brown (10YR 5/6) mottles; massive; firm; few fine roots; common fine pores; common fine black concretions; strongly acid; clear irregular boundary.

B&A—17 to 23 inches; grayish brown (10YR 5/2) silty clay loam; common medium distinct yellowish red (5YR 5/6) mottles; weak coarse prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; common fine discontinuous tubular pores; patchy thin clay films on vertical faces of peds; tongues of light brownish gray (10YR 6/2) silt loam make up about 15 percent of the horizon; strongly acid; clear irregular boundary.

B2tg—23 to 39 inches; dark gray (10YR 4/1) silty clay loam; many medium prominent red (2.5YR 4/8) mottles; moderate medium angular blocky structure parting to moderate fine subangular blocky; firm; continuous distinct dark gray clay films; most surfaces of medium peds are coated with gray (10YR 5/1) and light gray (10YR 7/1) silt loam; few fine black concretions; strongly acid; gradual wavy boundary.

B3g—39 to 54 inches; light brownish gray (10YR 6/2) silty clay loam; common coarse distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; medium acid; gradual wavy boundary.

C1—54 to 65 inches; light brownish gray (10YR 6/2) silty clay loam; few medium distinct yellowish brown (10YR 5/6) mottles; massive; firm; neutral.

Solum thickness ranges from 50 to 75 inches. Content of sand, which is dominantly very fine sand, ranges from 15 to 40 percent in the control section.

The A1 and Ap horizons have hue of 10YR, value of 4 or 5, and chroma of 1 or 2. Texture is silt loam, loam, or very fine sandy loam. Reaction ranges from very strongly acid to medium acid.

The A2g horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2. Texture is silt loam, loam, or very fine sandy loam. Reaction ranges from very strongly acid to medium acid.

The Btg horizon has hue of 10YR, value of 4 to 6, and chroma of 1 or 2. Red mottles in the upper Btg horizon range from common to many. Mottles in shades of brown or gray range from few to common. Texture is silt loam, loam, or silty clay loam. Reaction ranges from very strongly acid to slightly acid.

The B3g and C horizons have hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2. Texture is silt loam, loam, or silty clay loam. Reaction ranges from very strongly acid to moderately alkaline.

Malbis series

The Malbis series consists of moderately well drained, moderately slowly permeable soils. These soils formed in loamy alluvium on upland terraces of Pleistocene age. Slopes are generally about 3 percent but range from 1 to 5 percent.

Malbis soils are geographically closely associated with the Beauregard, Cadeville, and Ruston soils. Beauregard soils are on side slopes along drainageways and have gray mottles within 30 inches of the surface. Cadeville soils are on side slopes and have a fine control section. The Ruston soils are on higher lying ridges or on side slopes along drainageways and are better drained.

Typical pedon of Malbis fine sandy loam, 1 to 5 percent slopes, 0.4 mile north of blacktop road, NE1/4SW1/4 sec. 15, T. 3 S., R. 6 W.

A1—0 to 5 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak fine granular structure; very friable; strongly acid; clear smooth boundary.

B1—5 to 11 inches; yellowish brown (10YR 5/4) fine sandy loam; weak medium subangular blocky structure; very friable; strongly acid; clear smooth boundary.

B21t—11 to 19 inches; yellowish brown (10YR 5/8) sandy clay loam; weak medium subangular blocky structure; friable; few medium roots; patchy thin clay films on surfaces of peds; strongly acid; clear smooth boundary.

B22t—19 to 29 inches; strong brown (7.5YR 5/8) sandy clay loam; moderate medium subangular blocky structure; friable; few medium roots; discontinuous distinct clay films on surfaces of peds; strongly acid; clear smooth boundary.

B23t—29 to 34 inches; yellowish brown (10YR 5/8) sandy clay loam; few fine faint light yellowish brown mottles; moderate medium subangular blocky structure; friable; few medium and fine roots; few fine discontinuous random tubular pores; discontinuous thin clay films on surfaces of peds; strongly acid; clear smooth boundary.

B24t—34 to 57 inches; strong brown (7.5YR 5/8) sandy clay loam; common medium distinct light yellowish brown (10YR 6/4) mottles; moderate medium subangular blocky structure; firm; few fine roots; few fine discontinuous random tubular pores; discontinuous thin clay films on surfaces of some peds; 10 percent plinthite; strongly acid; clear smooth boundary.

B3—57 to 74 inches; yellowish brown (10YR 5/6) sandy clay loam; common medium distinct light yellowish brown (10YR 6/4) and few medium distinct gray (10YR 6/1) mottles; weak very coarse prismatic structure parting to weak medium subangular blocky; firm and brittle; 10 percent plinthite; very strongly acid; clear smooth boundary.

Solum thickness ranges from 60 to more than 80 inches.

The A horizon has hue of 10YR and value of 6 and chroma of 3 or value of 4 or 5 and chroma of 2 or 3. It is medium acid to strongly acid.

The B1 horizon has hue of 10YR, value of 4 or 5, and chroma of 4 through 6. It is strongly acid to very strongly acid.

The Bt horizon has hue of 10YR, value of 5, and chroma of 4 to 8 or hue of 7.5YR, value of 5, and chroma of 6 to 8. It is clay loam or sandy clay loam. Below 30 inches gray and red mottles are common. The lower Bt horizon contains about 5 to 20 percent plinthite. Reaction is strongly acid to very strongly acid.

Mamou series

The Mamou series consists of somewhat poorly drained, slowly permeable soils. These soils formed in loamy alluvium on side slopes of very gently sloping natural levees along abandoned stream channels on low terraces of Pleistocene age. Slopes are dominantly about 2 percent but range from 1 through 3 percent.

Mamou soils are geographically closely associated with Crowley and Vidrine soils. Crowley soils are grayer and are at higher elevations. Vidrine soils are on low mounds and have a coarse-silty over clayey control section.

Typical pedon of Mamou silt loam, 6 miles southeast of Oberlin, 0.5 mile south of Highway 26 and Highway 104 intersection, 120 feet east of Parish Road, SE1/4NE1/4 sec. 33, T. 5 S., R. 3 W.

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam; many medium distinct brown (10YR 4/3) mottles; weak fine granular structure; friable; medium acid; clear smooth boundary.

A2—8 to 16 inches; yellowish brown (10YR 5/4) silt loam; few fine distinct grayish brown mottles; weak medium subangular blocky structure; friable; few fine discontinuous random tubular pores; strongly acid; abrupt wavy boundary.

B21tg—16 to 24 inches; dark grayish brown (10YR 4/2) silty clay loam; common medium prominent red (2.5YR 4/8) mottles; strong medium subangular blocky structure; firm; few very fine discontinuous random irregular pores; very dark gray (10YR 3/1) ped coatings; continuous distinct clay films on surfaces of some peds; strongly acid; clear wavy boundary.

B22t—24 to 36 inches; yellowish brown (10YR 5/4) silty clay loam; dark grayish brown (10YR 4/2) surfaces of peds; few fine prominent red (2.5YR 4/6) mottles; moderate medium subangular blocky structure; firm; few fine discontinuous random irregular pores; discontinuous distinct clay films on surfaces of some peds; strongly acid; clear wavy boundary.

B3—36 to 47 inches; yellowish brown (10YR 5/6) silty clay loam; common medium distinct pale brown (10YR 6/3) and few fine prominent red (2.5Y 4/6) mottles; weak medium subangular blocky structure; firm; discontinuous distinct clay films on surfaces of peds; medium acid; gradual wavy boundary.

C—47 to 60 inches; mottled yellowish brown (10YR 5/6), red (2.5YR 4/8), and light brownish gray (10YR 6/2) loam; massive; firm; neutral.

Solum thickness ranges from 20 to 50 inches.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 1 or 2. It ranges from strongly acid to slightly acid.

The A2 horizon has hue of 10YR, value of 4 to 6, and chroma of 3 to 6. Texture is silt loam or very fine sandy loam. Reaction ranges from strongly acid to slightly acid.

The B2t horizon has ped coatings with hue of 10YR, value of 3 to 5, and chroma of 1 or 2. Ped interiors have hue of 10YR or 7.5YR, value of 3 to 6, and chroma of 4 to 6. Reaction ranges from strongly acid to slightly acid.

The C horizon ranges from gray to red. Texture is silty clay loam, loam, or silt loam. Reaction is slightly acid to neutral.

Messer series

The Messer series consists of deep, moderately well drained, slowly permeable soils. These soils formed in loamy alluvium on small convex mounds on broad flats on upland terraces of Pleistocene age. Slopes range from 1 to 5 percent.

Messer soils are geographically closely associated with Caddo, Glenmora, Guyton, and Kinder soils. Caddo and Kinder soils are on the same landscape with Messer soils but are gray throughout. Glenmora soils have a fine-silty control section and are on gently sloping side slopes. Guyton soils are at lower elevations and are gray throughout.

Typical pedon of Messer silt loam, in an area of Guyton-Messer complex, 4.3 miles west of Oakdale, 2.3 miles southwest of Highway 10, 416 feet east of East Belvin Road, SW1/4NW1/4 sec. 7, T. 3 S., R. 3 W.

A11—0 to 3 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; very friable; many fine roots; few fragments of charcoal; few fine iron and manganese concretions; medium acid; clear smooth boundary.

A12—3 to 7 inches; dark brown (10YR 4/3) silt loam; weak fine granular structure; very friable; many very fine and common fine roots; common fine iron and manganese concretions; strongly acid; clear smooth boundary.

A2—7 to 11 inches; yellowish brown (10YR 5/4) silt loam; weak fine subangular blocky structure; friable; common fine roots; many fine discontinuous random tubular pores; common fine and few medium iron and manganese concretions; very strongly acid; gradual wavy boundary.

B21—11 to 32 inches; light yellowish brown (10YR 6/4) silt loam; common medium distinct yellowish brown (10YR 5/6) mottles; pale brown (10YR 6/3) vertically oriented streaks; moderate medium subangular blocky structure; friable; common fine roots; common fine continuous random tubular pores; many fine and medium iron and manganese concretions; few worm casts; very strongly acid; abrupt irregular boundary.

B&A—32 to 38 inches; pale brown (10YR 6/3) silty clay loam (B2t); many coarse prominent red (2.5YR 4/8) and common medium distinct yellowish brown (10YR 5/6) mottles; weak medium prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; few fine discontinuous random tubular pores; discontinuous distinct clay films on surfaces of peds; light gray tongues and coatings of silt on surfaces of peds make up about 15 percent of horizon (A'2); very strongly acid; clear irregular boundary.

B22t—38 to 65 inches; yellowish brown (10YR 5/6) silty clay loam; few fine prominent yellowish red (5YR 5/6) mottles; moderate medium subangular blocky structure; firm; few fine roots; few medium discontinuous random tubular pores; gray surfaces of peds; discontinuous distinct clay films on surfaces of peds; very strongly acid.

Solum thickness ranges from 60 to 100 inches. Reaction ranges from medium acid to very strongly acid throughout.

The A horizon has hue of 10YR, value of 4 or 5 and chroma of 2 or 3, value of 5 and chroma of 4, or value of 6 and chroma of 3.

The upper B horizon (B2) has hue of 10YR and value of 5 and chroma of 3 to 6 or value of 6 and chroma of 3 or 4. It is silt loam or very fine sandy loam.

The lower B horizon (B2t) has hue of 10YR and value of 6 and chroma of 3 or 4 or value of 5 and chroma of 5 or 6. It is mottled in shades of red, yellow, and gray. Texture is silty clay loam or clay loam. Grayish silt tongues and ped coatings (A'2) make up 15 to 50 percent of the upper part of the B2t horizon.

Ruston series

The Ruston series consists of well drained, moderately permeable soils. These soils formed in loamy alluvium on side slopes and ridges on high stream terraces of Pleistocene age. Slopes range from 1 to 5 percent.

Ruston soils are geographically closely associated with Malbis soils. Malbis soils have gray mottles that are closer to the surface and have more than 5 percent plinthite.

Typical pedon of Ruston fine sandy loam, 1 to 5 percent slopes, 6.5 miles southwest of Elizabeth, 2.25 miles south of Louisiana Highway 112, 80 feet west of Turner Road, SW1/4NE1/4 sec. 15, T. 3 S., R. 5 W.

A1—0 to 5 inches; dark brown (10YR 4/3) fine sandy loam; weak fine granular structure; very friable; few medium roots; medium acid; clear smooth boundary.

A2—5 to 10 inches; yellowish brown (10YR 5/4) fine sandy loam; weak medium subangular blocky structure; very friable; common fine roots; strongly acid; clear smooth boundary.

B21t—10 to 28 inches; red (2.5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; patchy distinct clay films on surfaces of some peds; strongly acid; gradual smooth boundary.

B22t—28 to 40 inches; yellowish red (5YR 4/8) sandy clay loam; weak medium subangular blocky structure; firm; patchy distinct clay films on surfaces of peds; strongly acid; gradual wavy boundary.

B&A—40 to 50 inches; yellowish red (5YR 5/8) sandy loam (B2t); weak medium subangular blocky structure; friable; patchy thin clay films on surfaces of some peds; about 15 percent light yellowish brown (10YR 6/4) (A'2); very strongly acid; gradual wavy boundary.

B'21t—50 to 65 inches; yellowish red (5YR 4/8) sandy clay loam; weak medium subangular blocky structure; firm; patchy thin clay films on surface of some peds; very strongly acid.

Solum thickness exceeds 60 inches. Reaction ranges from slightly acid to strongly acid in the A horizon and from medium acid to very strongly acid in the Bt horizon.

The A horizon has hue of 10YR, value of 4 to 6 and chroma of 2, value of 5 or 6 and chroma of 3 or 4, or value of 4 and chroma of 3.

The Bt horizon has hue of 5YR and value of 4 and chroma of 4 to 8 or value of 5 and chroma of 6 to 8 or hue of 2.5YR, value of 4 or 5, and chroma of 6 to 8. Texture is sandy clay loam, fine sandy loam, loam, or clay loam. In some pedons the B't horizon is mottled in shades of gray and brown.

Vidrine series

The Vidrine series consists of somewhat poorly drained, slowly permeable soils. These soils formed in clayey alluvium on broad flats on low terraces of late Pleistocene age. In Allen Parish these soils are on small convex mounds and are mapped only in complex with Crowley and Wrightsville soils. Slopes range from 0 to 5 percent. The water table is at a depth of 1 to 2 feet in December through April.

Vidrine soils are geographically closely associated with Crowley, Kinder, Mamou, and Wrightsville soils. Crowley, Kinder, and Wrightsville soils occur on the flats and have lower chroma throughout. Mamou soils are on side slopes along abandoned stream channels and have a fine-silty control section.

Typical pedon of Vidrine silt loam, in an area of Crowley-Vidrine complex, 4 miles east of Kinder, 250 feet north of U.S. Highway 190, 150 feet west of Parish Road 2-30, SE1/4SE1/4 sec. 33, T. 6 S., R. 4 W.

Ap—0 to 7 inches; dark brown (10YR 4/3) silt loam; weak fine granular structure; friable; many fine roots; many fine discontinuous random tubular pores; common soft brown bodies; strongly acid; clear wavy boundary.

B1—7 to 18 inches; yellowish brown (10YR 5/4) silt loam; common fine faint yellowish brown mottles; weak fine subangular blocky structure; friable; many fine roots; few fine discontinuous random tubular pores; common soft yellowish brown bodies; very strongly acid; abrupt wavy boundary.

B&A—18 to 22 inches; yellowish brown (10YR 5/4) silty clay loam; common medium distinct light brownish gray (10YR 6/2) and few fine prominent red (2.5YR 4/6) mottles; moderate medium subangular blocky structure; firm; few fine discontinuous random tubular pores; common light gray silt coatings about 2.0 centimeters thick make up about 15 percent of the horizon; patchy thin clay films on surfaces of peds; common medium iron and manganese concretions; very strongly acid; abrupt wavy boundary.

B21tg—22 to 34 inches; dark gray (10YR 4/1) silty clay; many fine prominent red (2.5YR 4/8) and few fine distinct strong brown (7.5YR 5/6) mottles; strong coarse prismatic structure parting to strong coarse angular blocky; very firm; continuous thick dark grayish brown clay films on surfaces of peds; few thin light gray silt coats along cracks; medium acid; clear wavy boundary.

B22tg—34 to 43 inches; mottled grayish brown (10YR 5/2), yellowish brown (10YR 5/6), and yellowish red (5YR 5/8) silty clay; moderate medium subangular blocky structure; firm; discontinuous thick clay films on surfaces of peds; slightly acid; clear wavy boundary.

B31g—43 to 61 inches; pale brown (10YR 6/3) silty clay loam; common medium distinct yellowish brown (10YR 5/8) mottles; moderate medium subangular blocky structure; firm; slightly acid; gradual wavy boundary.

B32g—61 to 70 inches; yellowish brown (10YR 5/6) silty clay loam; common medium distinct light brownish gray (10YR 6/2) mottles; massive; firm; neutral.

Solum thickness ranges from 48 to 80 inches.

The Ap horizon has hue of 10YR and value of 3 to 6 and chroma of 2 or value of 4 to 6 and chroma of 3. It ranges from very strongly acid to medium acid.

The B1 horizon has hue of 10YR and value of 5 and chroma of 3 to 6 or value of 6 and chroma of 3 or 4. Texture is silt loam or very fine sand. Reaction ranges from very strongly acid to medium acid.

The Btg horizon has hue of 10YR and value of 4 to 6 and chroma of 1 or value of 4 to 6 and chroma of 2. Texture is silty clay loam or silty clay. Reaction ranges from very strongly acid to medium acid in the upper part and from slightly acid to moderately alkaline in the lower part. Mottles are common to many and range from red to yellowish brown.

The B3g horizon has hue of 10YR, value of 5 or 6, and chroma of 1 to 6. Texture is silt loam, silty clay loam, or silty clay. Reaction ranges from slightly acid to moderately alkaline.

Wrightsville series

The Wrightsville series consists of poorly drained, very slowly permeable soils. These soils formed in clayey alluvium on broad flats and in drainageways on low terraces of Pleistocene age. Slopes are less than 1 percent.

Wrightsville soils are geographically closely associated with Acadia, Basile, Kinder, and Vidrine soils. Acadia soils are at higher elevations and are better drained. Basile soils have a fine-silty control section and are more alkaline. Kinder soils are at higher elevations and have a fine-silty control section. Vidrine soils are on small mounds and have a coarse-silty over clayey control section.

Typical pedon of Wrightsville silt loam, in an area of Wrightsville-Vidrine complex, 10.5 miles southeast of Oberlin, 0.9 mile north of Parish Road 1-02, 100 feet west of logging road, center of Spanish Land Grant, sec. 39, T. 6 S., R. 2 W.

A1—0 to 4 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; few fine and few medium roots; few fine discontinuous random tubular pores; common fine iron and manganese concretions; very strongly acid; clear wavy boundary.

A2g—4 to 13 inches; light brownish gray (10YR 6/2) silt loam; few fine distinct yellowish brown mottles and few light gray (10YR 7/1) ped coatings; weak medium subangular blocky structure; friable; few fine roots; few fine discontinuous random tubular pores; few fine iron and manganese concretions; very strongly acid; abrupt irregular boundary.

B&A—13 to 21 inches; light brownish gray (10YR 6/2) silty clay loam; few fine distinct yellowish brown mottles; moderate medium subangular blocky structure; firm; few fine roots; many fine discontinuous random tubular pores; light gray silt loam on faces of peds makes up about 15 percent of the horizon; patchy thick clay films on surfaces of peds; tongues of light brownish gray silt loam 5 inches wide extend into Bt horizon to a depth of 21 inches; common fine iron and manganese concretions; very strongly acid; clear broken boundary.

B21tg—21 to 34 inches; light brownish gray (10YR 6/2) silty clay; common fine distinct dark yellowish brown (10YR 4/4) mottles; weak medium prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; dark yellowish brown oxidation around roots; continuous thick clay films on surfaces of peds; strongly acid; clear smooth boundary.

B22tg—34 to 49 inches; gray (10YR 5/1) silty clay; many coarse distinct yellowish brown (10YR 5/6) mottles; weak coarse prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; patchy thin clay films on surfaces of peds; strongly acid; clear smooth boundary.

C—49 to 60 inches; grayish brown (2.5Y 5/2) silty clay; many coarse distinct yellowish brown (10YR 5/6) mottles; massive; firm; neutral.

Solum thickness ranges from 40 to 70 inches. Reaction ranges from extremely acid to strongly acid throughout.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 2.

The A2 horizon has hue of 10YR and value of 5 to 7 and chroma of 1 or value of 6 or 7 and chroma of 2 or has hue of 2.5Y, value of 6 or 7, and chroma of 2.

The Btg horizon has the same color range as the A2 horizon. It is silty clay loam, silty clay, or clay.

The C horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2. Texture is silty clay or clay.

landforms and surface geology

By Dr. Bobby J. Miller, Department of Agronomy, Agricultural Experiment Station, Louisiana State University.

The physiography of Allen Parish is almost entirely controlled by the nature, the mode of accumulation, and the postdepositional changes of three major Pleistocene terraces. The parish is essentially a young, seaward-sloping coastal plain made up of three physiographic regions, each corresponding to outcrop areas on one of the three major Pleistocene terraces.

The three major terraces were formed during interglacial stages of the Pleistocene. According to Holland and coworkers (*6*), they are lithologically similar. The major differences are an overall decrease in gravel content and an increase in clay content from oldest to youngest. In general, each terrace represents an accumulation, during interglacial stages, of sediments comparable to present accumulations along major streams and the gulf coast of Louisiana.

Glaciation lowers sea level and exposes large areas of recently deposited sediments. Streams draining the adjoining areas flow onto the recently exposed surfaces and form channels. These streams may carry sediments eroded from the adjoining areas and deposit some of those sediments on the recently exposed surfaces. In general, the lower the sea level, the lower the base level of streams and the more rapid the erosion and the downcutting of streams.

Glacial recession results in a rise in sea level and a corresponding rise in stream base levels. Delta areas move inland, and sediment accumulation becomes pronounced along streams. Because of the uplift of the landmass or the lower final rise of sea level, or both, part of the new landmass exposed during glaciation may remain exposed and continuously subject to weathering and soil formation. Subsequent interglacial stages result in continued widespread accumulation of sediments along major streams and coastal areas. This progression has been typical in the formation of the different terraces now exposed in Allen Parish.

Each terrace has a suite of dominant soils different from that on the other terraces. A comparison of soil maps and geologic maps, however, indicates that the dominant soils on both the Bentley and the Montgomery Terraces may also occur on the next younger terrace in areas very near the older terrace.

Undoubtedly, differences in map scale and detail of mapping between available soil surveys and geologic surveys can partially account for the lack of correspondence between the terrace formation and the suite of soils from area to area. We can expect this lack of correspondence also because the factors responsible for geologic formations differ from the factors of soil formation. Because of large differences in the time of weathering and soil formation on lithologically similar parent materials, we could expect different suites of soils on the similar materials of different age.

Investigations conducted during the survey indicate that in areas near an older terrace, the younger terrace may have soils that developed in parent material that consists mainly of sediments eroded from the older terrace. Sediments of this nature can accumulate in coastal areas near the mouth of streams draining the upland at the same time the younger terrace is being formed. The accumulation of these materials can also occur on the freshly exposed land surface along streams that drain the older upland and, as the sea level is lowered, that form channels across the newly exposed surface.

Recently exposed areas of the younger terraces may also accumulate delta or alluvial fan deposits from the older formations in areas near the interface between the different age terraces. In this way, sediments that have undergone at least one cycle of weathering and soil development on the older terrace can become a geologically younger parent material to soils on a younger terrace formation. This parent material is thus limited in extent and differs lithologically from the predominant parent material that forms the rest of the terrace of approximately the same age. In Allen Parish, the soils that developed in this parent material are morphologically similar to soils developed on the next older terrace.

These soils differ considerably from soils developed in other relatively unweathered parent material on other parts of the younger terrace. Examples of these depositional sequences are evident in the southern part of the parish in parts of sections 13 and 24, T. 5 S., R. 3 W.

The Bentley, the oldest of the Pleistocene terraces in Allen Parish, was deposited as a deltaic plain of the Mississippi River during the Yarmouth interglacial stage, which ended approximately 400,000 years ago (*6*). Its outcrop area lies entirely west of the Calcasieu River and forms a northeast-southwest trending band in the northwestern part of the parish. The highest elevations in interfluve areas range from around 200 feet in the northwestern part of the outcrop area to about 90 feet in the southern part. The overall slope is approximately 5 feet per mile to the south with a slight west-east slope. In most areas, the Bentley is separated from younger, lower lying formations by a distinct escarpment.

The Bentley Terrace area is the most dissected in the parish and has considerably more relief than the younger formations. In places the highest interfluve positions are 100 feet or more above streams draining the area. Practically all the area is characterized by undulating topography. Slopes of less than 1 percent or more than 5 percent occur only in limited areas.

Beauregard, Cadeville, Malbis, and Ruston soils are dominant within outcrop areas of the Bentley Terrace. The Malbis-Ruston and Beauregard-Malbis map units on the general soil map correspond approximately to those outcrop areas. Small areas of these soils, however, may have formed on the younger Montgomery Terrace in areas near where it adjoins the Bentley Formation. The parent material of Cadeville soil, for example, is more clayey and more compact and laminated at shallow depths than that of Malbis, Beauregard, or Ruston soils. Tertiary age sediments of the Foley Formation have been described very near the surface in parts of Allen Parish (*8*). Further studies are needed to determine if outcrop areas of this formation do exist in the parish and if Cadeville or possibly other soils have developed in these older sediments.

The Montgomery, the second oldest of the Pleistocene terraces in Allen Parish, was deposited as a coastwise terrace and as fluvial sediments of the Mississippi River during the Sangamon interglacial stage, perhaps 100,000 to 300,000 years ago (*6*). The Montgomery Terrace has an overall slope of about 3 feet per mile to the south. In most places it is separated from the younger Prairie Terrace by an escarpment. In some parts of southern Allen Parish, however, the Montgomery-Prairie Terrace boundary is imperceptible so far as surface features are concerned.

The coastwise Montgomery Terrace occurs as a band 6 to 8 miles wide in the southwestern part of the parish, west of the Calcasieu River. The fluviatile Montgomery in the northern part of the parish, mostly east of Whiskey Chitto Creek, makes up nearly one-third of the parish. The East Bay and West Bay areas on the east and west sides of the Calcasieu River are large outcrop areas of the old Mississippi River flood plain deposits. They are broad, flat, poorly drained, and swampy. The drainage system is poorly developed.

Caddo, Glenmora, and Messer soils are the dominant on the Montgomery Terrace. The Glenmora-Caddo and Guyton-Caddo map units on the general soil map make up most of the area of this terrace in the parish. Soils that occur dominantly on the Bentley Terrace may be mapped in small areas of the Montgomery Terrace (*6*) adjacent to or near the Bentley Terrace outcrop.

The Prairie is the youngest of the three major Pleistocene terraces in the survey area. The Prairie Terrace in Allen Parish was deposited in the region where the coastwise and fluviatile environments merge. Holland and coworkers (*6*) indicate that it was deposited during the Peorian interglacial stage. Geology reports show that it covers the southern third of the parish except for an area along the west boundary, which is covered by a band of older deposits a few miles wide. The Prairie is the lowest and generally the least dissected of the three major Pleistocene terraces. Highest elevations in interfluve areas range from about 70 feet in the northern part of the outcrop area to about 30 feet in the southern part. The overall slope is about 2 feet per mile from north to south but with a slight east-west slope. Almost the entire area is level or nearly level. Slopes rarely exceed 3 percent.

Seven of the soils mapped in the parish—Acadia, Crowley, Frost, Gore, Kinder, Vidrine, and Wrightsville soils—occur only on the Prairie Terrace. The Frost-Crowley and Kinder-Glenmora map units on the general soil map correspond approximately to outcrop areas of the Prairie Terrace. Relatively large areas of Caddo, Glenmora, and other soils, which occur mainly on the MontgomeryTerrace, are mapped in areas of the Prairie Terrace adjoining or very near the older terrace outcrop areas (*6*). In some places, they may have developed in Prairie age sediments of materials originating largely through erosion of the older adjacent terrace formations.

Large areas of stream deposits younger than the Prairie Terrace correspond to the Cahaba-Bienville map unit on the general soil map. These deposits occur almost exclusively as long bands paralleling major streams that drain the parish. They are at elevations several feet above the modern flood plain. The elevations range from about 30 feet along streams draining the Prairie Terrace to perhaps 150 feet along some streams draining the Bentley Terrace areas.

This post-Prairie formation is believed to correspond in age to the late Pleistocene terrace identified as Deweyville Terrace in other areas of Louisiana (*11*). Saucier (*11*) indicates that the Deweyville Terrace was deposited approximately 20,000 to perhaps 30,000 years ago. The Deweyville in Allen Parish consists largely of sediments eroded from the surrounding soil areas. Thus, these sediments had been exposed to a previous weathering and soil development cycle before deposition in their present location. Soils with low base status and prominent horizons can develop within shorter periods in highly weathered parent material than in less weathered material.

Investigations conducted during the survey indicate that these sediments may also occur in areas on the Prairie Terrace not associated with present streams. This occurrence is demonstrated by the narrow north-south trending bands of Cahaba-Bienville soils south of the Calcasieu River in the southern part of the parish. In these areas the sediments are channel-fill and overflow deposits of drainageways on the Prairie age surface. In some places these low areas or drainageways, which are essentially completely filled with sediments, are among the highest points on the present landscape.

Holocene deposits of sediments eroded from the surrounding areas occupy narrow bands paralleling streams that drain the parish. These areas correspond to the Guyton-Cascilla map unit on the general soil map. They are at lower elevations and are nearer the stream channels than the late Pleistocene (Deweyville) terrace. The elevations range from about 20 feet in the southern part of the parish to nearly 200 feet along streams draining uplands in the northwestern part.

Compared with Cascilla soils, the Guyton soils developed in older alluvium that may be early Holocene or possibly late Pleistocene in age. Guyton soils have a well expressed B horizon characterized by an accumulation of translocated clays. Processes resulting in this characteristic are normally very slow and are prominently expressed only after long periods of soil development. Guyton soils appear as an essentially level, loamy alluvial plain with abandoned, partially filled stream channels. Prominent natural levees are not apparent. Cascilla soils occur as more recent loamy flood plain or natural levee deposits that in many areas bury the sediments that are the parent materials of the Guyton soils.

These Holocene age parent materials have already undergone at least one previous cycle of weathering and soil formation in the surrounding land areas before deposition on the stream flood plains. Thus, highly weathered soils with low base status and small quantities of weatherable minerals can develop rapidly in these young sediments. In fact, even the youngest soil, the Cascilla, is more highly weathered and lower in bases than some soils developed in much older Pleistocene terrace deposits.

Small hillocks commonly referred to as pimple mounds are a common physiographic feature on the Pleistocene terraces. These mounds are small rounded hilly features that are almost circular to elliptical in shape and range up to about 100 feet in diameter. On the average they are about 50 feet across and 2 to 3 feet above the flat or slightly concave intermound areas. The most prominent mounds may be as much as 6 feet high. In many areas, they have been leveled by landowners to facilitate agricultural use of the soil. The density varies from one area to another, ranging from none to more than 10 per acre.

Considerable literature exists that discusses the nature and possible origin of these and similar mounds in other areas. No generally accepted explanation of their origin has yet been offered. Holland and coworkers (*6*) considered the mounds in Allen Parish as a natural result of erosion of a sandy or silty material in an area where very little relief and vegetative cover protected the soil from erosion to the mounds.

Soils on the mounds differ from those in the intermound areas. They are typically better drained, have a thicker A horizon, and are more sandy and less clayey than soils in the intermound areas. Messer and Vidrine soils formed on mounds in Allen Parish. Vidrine soils formed only on mounds developed in clayey sediments of the Prairie Terrace Formation. Messer soils formed on mounds developed in loamy sediments on all ages of parent materials where the pimple mounds occur.

The time of mound formation on sediments of different ages is not known. Certainly the processes or agents responsible for their development have been active since deposition of the late Pleistocene (Deweyville) Terrace on which they occur. The presence of mounds in sloping areas of the Bentley Terrace indicates that their formation postdates development of that surface. Their absence on Holocene deposits suggests that casual agents in their formation may not have been active during post-Pleistocene time.

Relatively small, approximately circular depressions called bagols occur in some level areas of the Bentley, Montgomery, and Prairie Terraces. These shallow, flat-bottomed depressions are about 2 feet lower than the surrounding areas and range from about 100 feet to nearly one-half mile in diameter. They are either entirely enclosed or open at one or more places around their perimeter. Water, a few inches to nearly 2 feet deep, may stand in them for varying periods after rainstorms. Although not continuously flooded, they support swamp vegetation.

Generally accepted explanations for the origin of bagols have not yet been offered. According to Holland and coworkers (*6*), the bagols in Allen Parish are incompletely filled scars of major streams that flowed across the terrace surfaces at the time of the formation of the terraces. According to this interpretation, the bagols are incompletely obscured depositional features of the original terrace surfaces. Guyton soils are dominant in the bagol areas.

Channel scars form depressions on the stream flood plains and on the late Pleistocene and Prairie age surfaces along some of the larger streams that drain the parish. These depressions are remnants of abandoned stream channels that have not been completely filled with sediments. They vary considerably in depth, width, and length depending on the original characteristics of the stream, the length of the channel segment abandoned by the stream, and the postabandonment depositional history. They can usually be recognized by their position, stream channel-like cross section, and general radius of curvature. Guyton soils occur in most of these depressions.

formation of the soils

By Dr. Bobby J. Miller, Department of Agronomy, Agricultural Experiment Station, Louisiana State University.

This section explains the processes of soil formation and relates them to the soils in the survey area.

processes of soil formation

The processes of soil formation influence the kind and degree of development of soil horizons. The factors of soil formation—climate, living organisms, relief, parent material, and time—determine the rate and relative effectiveness of the different processes.

Important soil-forming processes are those that result in (1) additions of organic, mineral, and gaseous materials to the soil; (2) losses of these same materials from the soil; (3) translocation of materials from one point to another within the soil; and (4) physical and chemical transformation of mineral and organic material within the soil (*12*).

Many processes occur simultaneously, for example, the accumulation of organic matter, the development of soil structure, and the leaching of bases from some soil horizons. The contribution of a particular process may change over a period of time. The installation of drainage and water control systems, for example, can change the length of time some soils are flooded or saturated with water. Some important processes that have contributed to the formation of the soils in Allen Parish are discussed in the following paragraphs.

Organic matter has accumulated and has been partially decomposed and incorporated in all the soils. Because most of the organic matter is produced in and above the surface layer, the surface layer is higher in organic matter content than the deeper horizons. Living organisms decompose, incorporate, and mix organic residues into the soil. Some of the more stable products of decomposition remain as finely divided materials that contribute to darker colors, increased water-holding and cation-exchange capacities, and granulation in the soil.

The continuing addition of alluvial sediments at the surface is important in the formation of soils on stream flood plains. The added sediments provide new parent material in which the processes of soil formation will then occur. Consequently, soils developed under these conditions may lack prominent horizons. Cascilla soils formed in recent, loamy, natural levee deposits along most streams in the parish. They have essentially uniform textures throughout and are characterized by a B horizon in which the development of soil structure has been a dominant process.

Processes resulting in development of soil structure have occurred in all the soils. Plant roots and other organisms contribute to the rearrangement of soil material into secondary aggregates. The decomposition products of organic residue and the secretions of organisms serve as cementing agents that help stabilize structural aggregates. Alternate wetting and drying as well as shrinking and swelling contribute to the development of structural aggregates and are particularly effective in soils that have appreciable amounts of clay. Consequently, soil structure is typically most pronounced in clayey B horizons and in surface horizons, which contain the most organic matter.

Most of the soils mapped in the parish have horizons in which reduction and segregation of iron and manganese compounds are important processes. Reducing conditions prevail for long periods in poorly aerated horizons. Consequently, the relatively soluble reduced forms of iron and manganese predominate over the less soluble oxidized forms. The reduced compounds of these elements result in the gray colors in the Bg and Cg horizons that are characteristic of many of the soils. In the more soluble reduced form, appreciable amounts of iron and manganese can be removed from the soils or translocated from one position to another within the soil by water.

The presence of concretions, largely of iron and manganese, and of browner mottles in predominantly gray horizons indicates segregation and local concentration of oxidized iron compounds as a result of alternating oxidizing and reducing conditions in the soil. The well drained and somewhat excessively drained soils do not have the gray colors associated with wetness and poor aeration. Apparently they are not dominated by a reducing environment for significant periods.

Water moving through the soil has leached many soluble components, including any free carbonates that may have been present initially, from some horizons of all the soils in the parish. The quantities of exchangeable bases and weatherable minerals that can readily break down to provide bases to the soils decrease with increasing age of the three major Pleistocene terraces—Prairie, Montgomery, and Bentley—in the parish. Recent local stream deposits are largely derived from material eroded from the surfaces of surrounding areas and thus may be highly weathered and low in bases at the time of deposition.

The formation, translocation, and accumulation of clay in the profile have affected all but the Cascilla soils in Allen Parish. Silicon and aluminum released as a result of weathering of such minerals as hornblende, amphibole, and feldspars can recombine with the components of water to form secondary clay minerals such as kaolinite. Clay is translocated from upper to lower horizons. As water moves downward, it carries small amounts of clay in suspension. This clay is redeposited, and it accumulates at the depths of penetration of the water or in horizons where it becomes flocculated or filtered out by fine pores in the soil. Over long periods, such processes can result in distinct horizons of clay accumulation.

All the soils in Allen Parish except Cascilla have a subsoil characterized by an accumulation of translocated clay. The quantities of translocated clay are nearly uniform for soils within a series but can differ greatly from one series to another. For example, in Crowley soils the upper part of the B horizon is more than 35 percent clay. In Bienville soils, the most clayey horizons are less than 18 percent clay.

A secondary accumulation of calcium carbonate occurs in the lower horizons in some soils in the parish. Some of the Crowley, Frost, and Gore soils, developed in the Prairie Formation, and some of the Basile soils, developed in Holocene sediments, have secondary accumulations of carbonates. Carbonates dissolved from overlying horizons have been translocated to these depths by water and redeposited. Other sources and processes can contribute in varying degrees to these carbonate accumulations, for examples, segregation of material within the horizon, upward translocation of materials in solution from deeper horizons during fluctuations in the level of the water table, and contributions of material from readily weatherable minerals such as plagioclase. In some pedons free carbonates are at depths of more than 2 feet and are overlain by acid soil horizons.

factors of soil formation

Soils are natural, three-dimensional bodies that formed on the earth's surface and that have properties resulting from the integrated effect of climate and living matter acting on parent material, as conditioned by relief over periods of time.

The interaction of five main factors influences the processes of soil formation and results in differences among the soils. These factors are the physical and chemical composition of the parent material; the kind of plants and other organisms living in and on the soil; the relief of the land and its effect on runoff and soil temperature and moisture conditions; and the length of time it took the soil to form.

The effect of any one factor can differ from place to place, but the interaction of all the factors determines the kind of soil that forms. Many of the differences in soils cannot be attributed to differences in the effects of only one factor. For example, the organic matter content in the soils of Allen Parish is influenced by several factors including relief, parent material, and living organisms. The following paragraphs describe the factors of soil formation as they relate to soils in the survey area.

climate

Allen Parish has a humid, subtropical climate. For a detailed discussion of the present climate in the parish, see "General nature of the survey area."

The climate is relatively uniform throughout the parish. Therefore, local differences in the soils are not caused by large differences in atmospheric climate. The warm average temperature and the large amount of precipitation favor a rapid rate of weathering of minerals in the soils. Gray colors in the Bg or Cg horizon in some of the soils indicate the release and reduction of iron. Mottled horizons or iron and manganese concentrations, or both, in most of the soils indicate oxidation and segregation of iron as a result of alternating oxidizing and reducing conditions.

The depth and degree of leaching and weathering of the predominant soils and underlying materials on the three major Pleistocene terraces increase from the youngest terrace to the oldest. This indicates that each terrace was exposed to weathering in a climate characterized by sufficient rainfall to cause considerable leaching and weathering throughout the soil for long periods of time before the next youngest terrace was deposited. Ancient climates (paleoclimates) in the area may have differed considerably from the present-day climate. In landscapes of different age, some of the differences between soils may be due, in part, to climatic differences over periods of thousands of years. In landscapes of comparable age, differences in weathering, leaching, and translocation of clay are caused chiefly by variations in all the factors of soil formation except climate.

living organisms

Living organisms exert a major influence on the kind and extent of soil horizons that develop. Plants and other organisms physically disturb the soil, which in turn modifies porosity and influences the formation of structure and incorporation of organic matter. In photosynthesis, plants use energy from the sun to synthesize compounds necessary for growth. In this way they produce additional organic matter. Growth and the eventual decomposition of plants recycle nutrients from the soil and serve as a major source of organic residue. Micro-organisms decompose and incorporate organic matter, which enhances the development of structure and generally increases the infiltration rate and available water holding capacity in soils.

Relatively stable organic compounds in soils generally have very high cation exchange capacities and thus increase the capacity of the soil to absorb and store nutrients such as calcium, magnesium, and potassium. The extent of these and other processes and the kind of organic matter produced can vary widely, depending on the kinds of organisms living in and on the soil.

Soils in the parish formed under three different major groups of natural vegetation. Crowley, Mamou, and perhaps some areas of Frost soils developed under native prairie vegetation—predominantly tall grasses such as big bluestem. Basile, Cascilla, and Guyton soils developed in areas where the predominant native vegetation was bottom land hardwoods such as water oaks, cypress, and tupelo. Other soils in the parish developed in areas of pine or mixed pine-hardwood vegetation.

Many writers have shown that the organic matter content of soils formed under prairie vegetation is typically higher than that of soils formed under forests (*7*). In Allen Parish, the soils formed under prairie vegetation generally have a higher organic matter content than those formed under hardwood vegetation. Soils formed under pine forest vegetation are generally lowest in organic matter content. None of the soils are characterized by large accumulations of organic matter, and most have less than 2 percent in the surface horizon, where quantities are greatest. Organic matter content may vary considerably in soils within a series as a result of agricultural use and management practices.

The role of vegetation in the leaching of plant nutrients from the soils is apparent in nearly all the soils in the parish. The growing vegetation removes nutrients from the soil horizons and translocates many of them to parts of the plant that are above ground. When the plant dies, these nutrients are released on the surface and in near surface horizons where they can be absorbed again and used by growing plants. In soils that become highly leached and weathered, this process can, over long periods of time, have considerable influence on the quantities and distribution of bases in the soil. For example, base saturations and soil reaction may decrease with depth to less leached and weathered zones in the soil. This distribution is characteristic of essentially all the soils in Allen Parish.

The kinds and populations of micro-organisms influence the amount of organic matter that accumulates in and on the soil. Aerobic organisms, which utilize oxygen from the air, decompose organic matter chiefly through rapid oxidation of organic residue. These organisms are most abundant and live longer in the better drained and aerated soils. Anaerobic organisms do not require oxygen from the air, and they decompose organic residue very slowly. They live longer in the more poorly drained soils. Differences in decomposition by micro-organisms can result in larger accumulations of organic matter in more poorly drained soils than in better drained soils. In general, the organic matter content is higher where the soil is more poorly drained and not well aerated.

relief

Relief and other physiographic features affect internal soil drainage, runoff, erosion and deposition, and exposure to the sun and wind.

The influence of relief on soils in Allen Parish is especially evident in the rate at which water runs off the surface, in the internal soil drainage, and in the depth and duration of a seasonal high water table in some of the soils. Relief and degree of dissection by streams generally increases with increasing age from the recent stream deposits through the Prairie, Montgomery, and Bentley Terraces. When other factors such as parent material and time are comparable, the steeper soils are better drained, have faster runoff, are more subject to erosion, have thinner A and B horizons, are less highly leached, and have a water table at a greater depth than soils in more gently sloping areas.

Many of these relationships are especially well expressed in the soils developed mostly on the Montgomery Terrace. For example, Glenmora and Caddo soils occur in many places in adjoining areas with the Glenmora in the more sloping positions. Compared to Caddo soils, Glenmora soils are better drained, have a deeper water table, and have faster surface runoff.

Relationships are similar for other soils developed in comparable parent material of approximately the same age. Table 19 summarizes the relationships of topography, runoff, soil drainage, and depth and duration of a seasonal high water table for all the soils mapped in the parish.

parent material and time

The parent material for mineral soils is the material from which the soils first developed. In Allen Parish, parent material has particularly affected certain differences in soil color, texture, permeability, and depth and degree of leaching. Parent material has also had a major influence on mineralogy of the soils and is a significant factor in determining their susceptibility to erosion. For the characteristics, distribution, and depositional sequence of the soil parent material, see "Landforms and surface geology."

Parent material and time are independent factors of soil formation. A particular kind of parent material may have been exposed to the processes of soil formation for periods ranging from a few years or less to more than a million years in some cases. The kinds of horizons and their degree of development within a soil are influenced by the length of time of soil formation. Long periods of time are generally required for the formation of prominent horizons. In Allen Parish, differences in time of soil formation may amount to thousands of years.

The soils in Allen Parish developed in Pleistocene or Holocene alluvial deposits. Three major Pleistocene terrace formations, the Bentley, Montgomery, and Prairie, are the parent materials of soils covering most of the area. The remaining soils developed in areas of late Pleistocene terraces and Holocene alluvium. This material occurs as narrow bands along streams draining the three major terraces. For a discussion of the age and source of the soil parent materials, see "Landforms and surface geology."

Geology reports (*6*) for the parish describe the Bentley, Montgomery, and Prairie Terraces as nearly identical lithologically. The only major differences are a general increase in clay content and decrease in gravel content from oldest to youngest, Bentley to Prairie. Each terrace formation was deposited under extremely variable conditions, and no typical depositional sequence can be described. The composition of each ranges from the coarsest sediments, including gravel, near its base, through sands and silts to more clayey deposits near its top. Characteristically, the deposits consist of relatively thin strata that occur as lenses of varying horizontal extent. Few, if any, individual lenses are horizontally continuous for the extent of the terrace.

The oldest of the Pleistocene terraces, the Bentley, was formed as a deltaic plain of the Mississippi River. It has been continuously exposed to weathering and soil formation since its deposition more than 400,000 years ago (*6, 11*). The outcrop area of the Bentley Terrace corresponds approximately to the Malbis-Ruston and Beauregard-Malbis map units shown on the general soil map. The soils developed in the Bentley Terrace Formation are highly weathered and leached and are characterized by a distinct B horizon of secondary accumulations of clay. They are classified as Ultisols and thus have low base status and acid soil reaction throughout. Typically, the base status and soil reaction are highest in the surface horizon and decrease with depth into the B horizon. In most areas, the reaction and base status do not increase at a greater depth within the soil because of the highly weathered and leached condition.

The Montgomery Terrace Formation is intermediate in age between the Bentley and Prairie Terraces. It was deposited mostly as Mississippi River backswamps and adjoining coastwise terraces. It has been exposed to weathering and soil formation continuously since its deposition more than 100,000 years ago. The outcrop area of the Montgomery Terrace corresponds approximately to the Glenmora-Caddo and Guyton-Caddo map units shown on the general soil map. Although highly weathered and leached, soils developed on the Montgomery Terrace are higher in bases and have generally higher reaction in the lower horizons than soils formed on the older Bentley Terrace. Typically, they have base saturation and soil reaction that decrease with depth to minimum values in the upper part of the B horizon. In most areas, base saturation and soil reaction increase with depth in the lower solum. These soils have a distinct B horizon of secondary accumulations of clay and are classified as Alfisols.

The youngest of the three major Pleistocene Terrace Formations, the Prairie, was deposited as an upper deltaic or lower alluvial plain of the Mississippi River. It has been continuously exposed to weathering and soil formation processes since its deposition perhaps 30,000 or more years ago. Its outcrop area is restricted to the southern half of the parish, where most areas lie east of the Calcasieu River. The Frost-Crowley and Kinder-Glenmora map units shown on the general soil map occur only on the Prairie Formation.

The predominant soils formed on the Prairie Formation are less leached and weathered than soils on the older terraces. They are all classified as Alfisols and, as such, have a B horizon characterized by secondary accumulations of clay. Typically, soil reaction and base saturation decrease with depth from the surface horizon to minimum values in the upper part of the B horizon. Below these minimum levels, reaction and base status typically increase with depth and, in many cases, may become neutral or alkaline in the lower part of the solum. Some of the soils, Crowley and Gore, for example, may have secondary accumulations of free carbonates within the solum in some areas.

Late Pleistocene and Holocene deposits occupy relatively narrow bands flanking streams draining the three major terraces. These deposits are almost entirely sediments eroded from the surrounding areas. The oldest and highest corresponds approximately to the Cahaba-Bienville map unit shown on the general soil map. Bienville soils developed in the coarsest sediments and have a sand or loamy sand texture throughout. Cahaba soils developed in the loamy and finer textured alluvium. All the soils are highly weathered and leached and have an acid reaction throughout the solum. They have a B horizon of secondary accumulation of clay. Bienville and Guyton soils are Alfisols, whereas Cahaba soils, with a lower base status, are Ultisols.

These areas of post-Prairie sediments are probably comparable in age to the Deweyville Terrace (about 20,000 years old) mapped in other areas in Louisiana and referred to in this area in a report by Saucier (*11*). These sediments, coming mostly from surface horizons of surrounding soils, may be low in bases and weatherable minerals at the time of deposition. Thus, some soils developed in these preweathered materials may have a lower base status and fewer weatherable minerals than many soils developed on the older Prairie Terrace. For example, Cahaba soils are lower in bases and have fewer weatherable minerals than any of the soils developed on the Prairie Terrace Formation.

Soils developed in even younger parent material occupy stream flood plains throughout the parish. These areas correspond approximately to the Guyton-Cascilla map unit shown on the general soil map. In these areas, Guyton soils formed in loamy alluvium that is thought to be late Pleistocene or early Holocene in age. These soils have a B horizon characterized by secondary accumulations of clays, a characteristic that develops only over long periods of time. The well drained Cascilla soils developed on natural levees in the youngest sediments in the parish. They are highly weathered and leached and have an acid soil reaction throughout the solum. They are classified as Inceptisols. No accumulation of translocated clay in the B horizon is evident.

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glossary

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as—

	Inches
Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	More than 12

Base saturation. The degree to which material having cation exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the total cation exchange capacity.

Bottom land. The normal flood plain of a stream, subject to flooding.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Compressible (in tables). Excessive decrease in volume of soft soil under load.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard; little affected by moistening.

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.

Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.

Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

Moderately well drained.—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically they are wet long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum, or periodically receive high rainfall, or both.

Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients.

Drainage, surface. Runoff, or surface flow of water, from an area.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of the activities of man or other animals or of a catastrophe in nature, for example, fire, that exposes the surface.

Excess fines (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

Fallow. Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grains are grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Ground water (geology). Water filling all the unblocked pores of underlying material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an upper case letter represents the major horizons. Numbers or lower case letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the *Soil Survey Manual*. The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue at the surface of a mineral soil.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil does not have a B horizon, the A horizon alone is the solum.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, the Roman numeral II precedes the letter C.

R layer.—Consolidated rock beneath the soil. The rock commonly underlies a C horizon, but can be directly below an A or a B horizon.

Leaching. The removal of soluble material from soil or other material by percolating water.

Low strength. The soil is not strong enough to support loads.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few, common,* and *many*; size—*fine, medium,* and *coarse*; and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Parent material. The unconsolidated organic and mineral material in which soil forms.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affecting the specified use.

Permeability. The quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves downward through the saturated soil. Terms describing permeability are:

Very slow	less than 0.06 inch
Slow	0.06 to 0.20 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plinthite. The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degree of acidity or alkalinity is expressed as—

	pH
Extremely acid	Below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the underlying material. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Stripcropping. Growing crops in a systematic arrangement of strips or bands which provide vegetative barriers to wind and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Subsurface layer. Technically, the A2 horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field is generally built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer (in tables). Otherwise suitable soil material too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

[Recorded in the period 1941-70 at Elizabeth, Louisiana]

Month	Temperature					Precipitation		
				2 years in 10 will have--			2 years in 10 will have--	
	Average daily maximum	Average daily minimum	Extreme maximum and minimum	Maximum temperature higher than--	Minimum temperature lower than--	Average	Less than--	More than--
	°F	°F	°F	°F	°F	In	In	In
January	61	38	82/6	80	17	4.9	2.9	7.1
February	64	40	85/6	80	21	4.9	2.8	6.8
March	71	46	90/20	86	28	5.1	3.2	7.7
April	79	56	93/33	89	35	5.6	2.3	8.0
May	85	62	100/42	94	46	5.0	2.9	8.4
June	91	68	106/51	98	55	5.0	2.2	7.9
July	93	70	103/54	100	64	5.1	2.8	7.9
August	93	70	107/58	103	60	4.1	2.7	5.3
September	89	65	103/36	98	49	4.2	2.4	6.8
October	82	54	98/31	94	34	3.5	0.6	5.6
November	71	45	88/24	87	26	4.6	2.2	6.7
December	64	40	83/16	80	20	6.3	3.6	8.6
Year	79	55	107/6	102	16	59.1	50.8	68.0

TABLE 2.--PROBABILITIES OF SPECIFIED LOW TEMPERATURES

[Recorded in the period 1941-70 at Elizabeth, Louisiana]

Probability	Minimum temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
SPRING:			
1 year in 10 later than--	February 15	March 9	March 26
2 years in 10 later than--	February 8	February 28	March 18
5 years in 10 later than--	January 26	February 10	March 3
FALL:			
1 year in 10 earlier than--	December 1	November 14	October 29
2 years in 10 earlier than--	December 7	November 22	November 4
5 years in 10 earlier than--	December 17	December 6	November 15

TABLE 3.--WATER-BUDGET DEFICITS AND SURPLUSES

[Recorded in the period 1941-70 at Elizabeth, Louisiana]

Month	Deficit								Surplus							
	Mean	Probability of deficit equal to or greater than							Mean	Probability of surplus equal to or greater than						
		.1 in	1 in	2 in	3 in	4 in	5 in	6 in		.1 in	2 in	4 in	6 in	8 in	10 in	12 in
	In	Pct							In	Pct						
January	0.0	--	--	--	--	--	--	--	4.1	100	80	47	30	7	3	--
February	0.0	3	--	--	--	--	--	--	4.0	97	77	40	23	7	3	--
March	0.0	--	--	--	--	--	--	--	3.5	90	70	40	23	3	--	--
April	0.1	23	--	--	--	--	--	--	2.7	73	33	30	10	7	3	--
May	0.3	43	13	--	--	--	--	--	2.0	47	30	17	10	10	7	3
June	0.9	70	40	13	7	3	--	--	0.7	30	17	7	--	--	--	--
July	1.3	73	56	27	13	--	--	--	0.3	17	7	3	--	--	--	--
August	1.7	90	67	37	17	7	3	3	0.1	7	3	--	--	--	--	--
September	1.0	67	37	23	7	--	--	--	0.1	3	3	--	--	--	--	---
October	0.7	52	33	7	3	--	--	--	0.5	17	7	3	3	3	--	--
November	0.1	7	3	--	--	--	--	--	1.5	50	20	13	7	3	3	--
December	0.0	--	--	--	--	--	--	--	4.2	93	70	47	23	10	0	--
Year	6.1								23.7							

TABLE 4.--POTENTIALS AND LIMITATIONS OF MAP UNITS ON THE GENERAL SOIL MAP

Map unit	Extent of area	Cultivated crops	Urban uses	Woodland	Pastureland
	Pct				
1. Malbis-Ruston	5	Fair: Low fertility, needs erosion control, lime needed.	Good	Good	Good: Low fertility, lime needed.
2. Beauregard-Malbis	9	Fair: Low fertility, lime generally needed, needs erosion control.	Fair: Wetness.	Good	Good: Low fertility, lime needed.
3. Glenmora-Caddo	23	Fair: Wetness, low fertility, needs erosion control.	Poor: Wetness.	Good	Fair: Wetness, low fertility, lime needed.
4. Guyton-Caddo	24	Poor: Wetness, flooding, low fertility, lime needed.	Poor: Flooding, wetness.	Good: Severe equipment limitations, moderate seedling mortality.	Fair: Wetness, flooding, low fertility, lime needed.
5. Frost-Crowley	12	Fair: Wetness, lime generally needed.	Poor: Wetness, occasional flooding at low elevations.	Good: Severe equipment limitations, moderate seedling mortality.	Fair: Low fertility, wetness, lime needed.
6. Kinder-Glenmora	6	Fair: Wetness, low fertility, lime generally needed.	Poor: Wetness.	Good	Fair: Low fertility, wetness, lime needed.
7. Cahaba-Bienville	8	Fair: Low fertility, lime needed, droughty.	Good	Good: Moderate seedling mortality, droughty, susceptible to damage by Texas leafcutting ant.	Good: Low fertility, lime needed, droughty.
8. Guyton-Cascilla	13	Poor: Frequent flooding, wetness.	Poor: Frequent flooding, wetness.	Good: Severe equipment limitations, moderate seedling mortality, wetness, flooding.	Poor: Frequent flooding, wetness.

TABLE 5.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
Ac	Acadia silt loam	3,100	0.6
BB	Basile and Guyton soils, frequently flooded	2,100	0.4
Be	Beauregard silt loam, 1 to 3 percent slopes	28,300	5.7
Bn	Bienville loamy fine sand, 1 to 5 percent slopes	7,630	1.5
Cd	Caddo-Messer complex	92,488	18.6
Cf	Cadeville very fine sandy loam, 1 to 5 percent slopes	3,040	0.6
Ch	Cahaba fine sandy loam, 1 to 3 percent slopes	8,450	1.7
Ck	Cahaba-Bienville-Guyton complex, gently undulating	22,240	4.5
Cr	Crowley-Vidrine complex	29,240	5.9
Fd	Frost silt loam	19,700	4.0
Fo	Frost silt loam, occasionally flooded	10,210	2.1
Ge	Glenmora silt loam, 1 to 3 percent slopes	50,000	10.1
Gf	Gore very fine sandy loam, 1 to 5 percent slopes	1,330	0.3
Go	Guyton silt loam, occasionally flooded	43,200	8.7
Gt	Guyton silt loam, ponded	390	0.1
Gu	Guyton-Messer complex	47,830	9.7
GY	Guyton and Cascilla soils, frequently flooded	58,000	11.7
Kd	Kinder-Messer complex	26,120	5.3
Ma	Malbis fine sandy loam, 1 to 5 percent slopes	27,230	5.5
Mm	Mamou silt loam	2,280	0.5
Rt	Ruston fine sandy loam, 1 to 5 percent slopes	10,420	2.1
Wr	Wrightsville-Vidrine complex	1,730	0.3
	Small water areas	460	0.1
	Total land area	495,488	-----
	Large water areas	512	-----
	Total area	496,000	100.0

TABLE 6.--YIELDS PER ACRE OF CROPS AND PASTURE

[Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil]

Map symbol and soil name	Corn	Cotton lint	Soybeans	Rice	Common bermuda-grass	Improved bermuda-grass	Pensacola bahiagrass
	Bu	Lb	Bu	Bu	AUM*	AUM*	AUM*
Ac--- Acadia	---	400	27	105	5.0	---	6.5
BB--- Basile and Guyton	---	---	---	---	4.3	---	---
Be--- Beauregard	60	450	25	100	6.0	---	7.0
Bn--- Bienville	65	---	27	---	5.5	11.0	---
Cd--- Caddo-Messer	---	---	24	104	5.2	---	6.3
Cf--- Cadeville	---	---	22	---	5.0	---	5.0
Ch--- Cahaba	85	750	30	---	---	9.5	8.0
Ck--- Cahaba-Bienville-Guyton	---	---	29	---	---	---	---
Cr--- Crowley-Vidrine	---	475	30	120	5.5	---	7.3
Fd--- Frost	---	400	30	105	5.5	---	6.0
Fo--- Frost	---	---	25	105	5.5	---	6.0
Ge--- Glenmora	60	450	25	110	5.5	---	7.0
Gf--- Gore	---	---	23	---	4.5	---	6.5
Go--- Guyton	---	---	---	---	6.0	---	9.0
Gt--- Guyton	---	---	---	---	---	---	---
Gu--- Guyton-Messer	---	---	---	---	---	---	---
GY--- Guyton and Cascilla	---	---	---	---	5.4	---	---
Kd--- Kinder-Messer	---	---	31	118	---	---	7.2
Ma--- Malbis	95	750	37	---	---	9.5	8.5
Mm--- Mamou	---	550	28	110	5.5	---	7.5
Rt--- Ruston	65	600	25	---	5.5	12.0	9.5
Wr--- Wrightsville-Vidrine	---	458	27	114	6.6	---	7.3

* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY

[Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available. Site index was calculated at age 30 for eastern cottonwood, at age 35 for American sycamore, and at age 50 for all other species]

Map symbol and soil name	Ordination symbol	Management concerns			Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Common trees	Site index	
Ac-----------------Acadia	2w8	Slight	Moderate	Slight	Loblolly pine-------- Slash pine----------- Longleaf pine-------- Sweetgum------------- Water oak------------	86 86 70 80 80	Loblolly pine, slash pine.
BB:*							
Basile-------------	4w9	Slight	Severe	Severe	Sweetgum------------- Baldcypress---------- Laurel oak----------- Overcup oak----------	65 --- --- ---	
Guyton-------------	2w9	Slight	Severe	Moderate	Loblolly pine-------- Slash pine----------- Sweetgum------------- Green ash------------ Southern red oak----- Water oak------------	90 90 --- --- --- ---	Loblolly pine, sweetgum.
Be-----------------Beauregard	2w8	Slight	Moderate	Slight	Loblolly pine-------- Slash pine----------- Longleaf pine-------- Sweetgum-------------	92 --- --- ---	Loblolly pine, slash pine.
Bn-----------------Bienville	2s2	Slight	Moderate	Moderate	Loblolly pine-------- Longleaf pine-------- Shortleaf pine-------	90 80 85	Loblolly pine, slash pine.
Cd:*							
Caddo--------------	2w9	Slight	Severe	Moderate	Loblolly pine-------- Slash pine----------- Sweetgum-------------	--- --- ---	Loblolly pine, slash pine.
Messer-------------	2w8	Slight	Moderate	Slight	Loblolly pine-------- Slash pine----------- Longleaf pine-------- Sweetgum-------------	90 90 75 90	Loblolly pine, slash pine.
Cf-----------------Cadeville	3c2	Slight	Severe	Moderate	Loblolly pine-------- Shortleaf pine-------	80 70	Loblolly pine, slash pine.
Ch-----------------Cahaba	2o7	Slight	Slight	Slight	Loblolly pine-------- Slash pine----------- Yellow-poplar-------- Sweetgum------------- Southern red oak----- White oak------------ Cherrybark oak------- Longleaf pine-------- Blackgum-------------	91 91 --- 90 --- --- --- 72 ---	Loblolly pine, slash pine, yellow-poplar, cherrybark oak.
Ck:*							
Cahaba-------------	2o7	Slight	Slight	Slight	Loblolly pine-------- Slash pine----------- Yellow-poplar-------- Sweetgum------------- Southern red oak----- White oak------------ Cherrybark oak------- Longleaf pine-------- Blackgum-------------	91 91 --- 90 --- --- --- 72 ---	Loblolly pine, slash pine, yellow-poplar, cherrybark oak.
Bienville----------	2s2	Slight	Moderate	Moderate	Loblolly pine-------- Longleaf pine-------- Shortleaf pine-------	90 80 85	Loblolly pine, slash pine.

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordi- nation symbol	Management concerns			Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Common trees	Site index	
Ck:* Guyton	2w9	Slight	Severe	Moderate	Loblolly pine Slash pine Sweetgum Green ash Southern red oak Water oak	90 90 --- --- --- ---	Loblolly pine, sweetgum.
Cr:* Crowley	2w9	Slight	Severe	Moderate	Slash pine Loblolly pine	90 90	Slash pine, loblolly pine.
Vidrine	2w9	Slight	Severe	Slight	Loblolly pine Slash pine Sweetgum	90 90 ---	Loblolly pine, slash pine.
Fd, Fo Frost	2w9	Slight	Severe	Moderate	Cherrybark oak Water oak Loblolly pine Slash pine Sweetgum	--- --- 90 90 ---	Loblolly pine, slash pine.
Ge Glenmora	2w8	Slight	Moderate	Slight	Loblolly pine Slash pine Longleaf pine	93 --- ---	Loblolly pine, slash pine.
Gf Gore	3c2	Slight	Moderate	Moderate	Loblolly pine Longleaf pine Slash pine	78 --- ---	Loblolly pine, slash pine.
Go Guyton	2w9	Slight	Severe	Moderate	Loblolly pine Slash pine Sweetgum Green ash Southern red oak Water oak	90 90 --- --- --- ---	Loblolly pine, sweetgum.
Gu:* Guyton	2w9	Slight	Severe	Moderate	Loblolly pine Slash pine Sweetgum Green ash Southern red oak Water oak	90 90 --- --- --- ---	Loblolly pine, sweetgum.
Messer	2w8	Slight	Moderate	Slight	Loblolly pine Slash pine Longleaf pine Sweetgum	90 90 75 90	Loblolly pine, slash pine.
GY:* Guyton	2w9	Slight	Severe	Moderate	Loblolly pine Slash pine Sweetgum Green ash Southern red oak Water oak	90 90 --- --- --- ---	Loblolly pine, sweetgum.
Cascilla	1w8	Slight	Moderate	Moderate	Cherrybark oak Eastern cottonwood Loblolly pine Nuttall oak Water oak Sweetgum Yellow-poplar	112 110 93 114 104 102 115	Cherrybark oak, eastern cottonwood, loblolly pine, Nuttall oak, sweetgum, American sycamore, yellow-poplar.

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Potential productivity: Common trees	Potential productivity: Site index	Trees to plant
Kd:*							
Kinder	2w9	Slight	Severe	Slight	Slash pine Loblolly pine	90 90	Slash pine, loblolly pine.
Messer	2w8	Slight	Moderate	Slight	Loblolly pine Slash pine Longleaf pine Sweetgum	90 90 75 90	Loblolly pine, slash pine.
Ma Malbis	2o1	Slight	Slight	Slight	Loblolly pine Slash pine Longleaf pine	90 90 80	Loblolly pine, slash pine.
Mm Mamou	2w8	Slight	Moderate	Slight	Loblolly pine Slash pine	90 90	Loblolly pine, slash pine.
Rt Ruston	2o1	Slight	Slight	Slight	Loblolly pine Slash pine Longleaf pine	91 91 76	Loblolly pine, slash pine, longleaf pine.
Wr:*							
Wrightsville	3w9	Slight	Severe	Moderate	Loblolly pine Sweetgum Water oak	80 80 80	Loblolly pine, sweetgum, water oak, willow oak.
Vidrine	2w9	Slight	Severe	Slight	Loblolly pine Slash pine Sweetgum	90 90 ---	Loblolly pine, slash pine.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 8.--RECREATIONAL DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe."]

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails
Ac-------------------- Acadia	Moderate: percs slowly, wetness.	Moderate: wetness.	Moderate: wetness, percs slowly.	Moderate: wetness.
BB:*				
Basile---------------	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.
Guyton---------------	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
Be-------------------- Beauregard	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness, slope, percs slowly.	Slight.
Bn-------------------- Bienville	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy, slope.	Moderate: too sandy.
Cd:*				
Caddo----------------	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Messer---------------	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: percs slowly.	Slight.
Cf-------------------- Cadeville	Moderate: percs slowly.	Slight---------------	Moderate: slope, percs slowly.	Slight.
Ch-------------------- Cahaba	Slight---------------	Slight---------------	Moderate: slope.	Slight.
Ck:*				
Cahaba---------------	Slight---------------	Slight---------------	Slight---------------	Slight.
Bienville------------	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy.
Guyton---------------	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Cr:*				
Crowley--------------	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, percs slowly.	Severe: wetness.
Vidrine--------------	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness, percs slowly.	Moderate: wetness.
Fd-------------------- Frost	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Fo-------------------- Frost	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
Ge-------------------- Glenmora	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, slope.	Moderate: wetness.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails
Gf------------------- Gore	Moderate: percs slowly.	Slight---------------	Moderate: percs slowly, slope.	Slight.
Go, Gt--------------- Guyton	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
Gu:*				
Guyton---------------	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Messer---------------	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: percs slowly.	Slight.
GY:*				
Guyton---------------	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
Cascilla-------------	Severe: floods.	Moderate: floods.	Severe: floods.	Moderate: floods.
Kd:*				
Kinder---------------	Severe: wetness.	Severe: wetness.	Severe: wetness, percs slowly.	Moderate: wetness.
Messer---------------	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Slight.
Ma------------------- Malbis	Slight---------------	Slight---------------	Moderate: slope.	Slight.
Mm------------------- Mamou	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness, percs slowly.	Moderate: wetness.
Rt------------------- Ruston	Slight---------------	Slight---------------	Moderate: slope.	Slight.
Wr:*				
Wrightsville---------	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, percs slowly.	Severe: wetness.
Vidrine--------------	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness, percs slowly.	Moderate: wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 9.--WILDLIFE HABITAT POTENTIALS

[See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated]

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
Ac----------------- Acadia	Fair	Good	Good	---	Good	Fair	Fair	Good	Good	Fair.
BB:*										
Basile------------	Poor	Fair	Fair	Fair	---	Good	Good	Fair	Fair	Good.
Guyton------------	Poor	Fair	Fair	Fair	---	Good	Good	Poor	Fair	Good.
Be----------------- Beauregard	Good	Good	Good	---	Good	Poor	Poor	Good	Good	Poor.
Bn----------------- Bienville	Fair	Fair	Fair	---	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Cd:*										
Caddo-------------	Fair	Fair	Fair	---	Fair	Good	Good	Fair	Fair	Good.
Messer------------	Good	Good	Good	---	Good	Poor	Poor	Good	Good	Poor.
Cf----------------- Cadeville	Fair	Good	Good	---	Good	Poor	Very poor.	Good	Good	Very poor.
Ch----------------- Cahaba	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Ck:*										
Cahaba------------	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Bienville---------	Fair	Fair	Fair	---	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Guyton------------	Fair	Fair	Fair	Fair	---	Good	Good	Fair	Fair	Good.
Cr:*										
Crowley-----------	Fair	Fair	Fair	Fair	---	Good	Good	Fair	Fair	Good.
Vidrine-----------	Fair	Good	Good	---	Good	Fair	Fair	Good	Good	Fair.
Fd, Fo------------- Frost	Poor	Fair	Fair	Good	---	Good	Good	Fair	Good	Good.
Ge----------------- Glenmora	Good	Good	Good	---	Good	Poor	Poor	Good	Good	Poor.
Gf----------------- Gore	Poor	Good	Good	---	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Go----------------- Guyton	Fair	Fair	Fair	Fair	---	Good	Good	Fair	Fair	Good.
Gt----------------- Guyton	Very poor.	Very poor.	Very poor.	Very poor.	---	Good	Good	Poor	Very poor.	Good.
Gu:*										
Guyton------------	Fair	Fair	Fair	Fair	---	Good	Good	Fair	Fair	Good.
Messer------------	Good	Good	Good	---	Good	Poor	Poor	Good	Good	Poor.
GY:*										
Guyton------------	Poor	Fair	Fair	Fair	---	Good	Good	Poor	Fair	Good.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT POTENTIALS--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba-ceous plants	Hardwood trees	Conif-erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
GY:*										
Cascilla	Poor	Fair	Fair	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
Kd:*										
Kinder	Fair	Fair	Fair	Good	Good	Good	Good	Fair	Good	Good.
Messer	Good	Good	Good	---	Good	Poor	Poor	Good	Good	Poor.
Ma: Malbis	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Mm: Mamou	Fair	Good	Good	---	Good	Fair	Fair	Good	Good	Fair.
Rt: Ruston	Good	Good	Good	---	Good	Poor	Very poor.	Good	Good	Very poor.
Wr:*										
Wrightsville	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
Vidrine	Fair	Good	Good	---	Good	Fair	Fair	Good	Good	Fair.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--BUILDING SITE DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe"]

Map symbol and soil name	Shallow excavations	Dwellings without basements	Small commercial buildings	Local roads and streets
Ac----------------- Acadia	Severe: wetness, too clayey.	Severe: shrink-swell, wetness.	Severe: shrink-swell, wetness.	Severe: shrink-swell, low strength.
BB:*				
Basile-----------	Severe: wetness, floods, cutbanks cave.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.
Guyton-----------	Severe: floods, wetness, cutbanks cave.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
Be----------------- Beauregard	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: low strength, wetness.
Bn----------------- Bienville	Severe: cutbanks cave.	Slight-----------------	Slight-----------------	Slight.
Cd:*				
Caddo------------	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Messer-----------	Moderate: wetness.	Slight-----------------	Slight-----------------	Moderate: low strength.
Cf----------------- Cadeville	Severe: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: low strength, shrink-swell.
Ch----------------- Cahaba	Slight---------------	Slight-----------------	Slight-----------------	Slight.
Ck:*				
Cahaba-----------	Slight---------------	Slight-----------------	Slight-----------------	Slight.
Bienville--------	Severe: cutbanks cave.	Slight-----------------	Slight-----------------	Slight.
Guyton-----------	Severe: wetness, cutbanks cave.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Cr:*				
Crowley----------	Severe: wetness, too clayey.	Severe: shrink-swell, wetness.	Severe: shrink-swell, wetness.	Severe: low strength, shrink-swell.
Vidrine----------	Severe: wetness, too clayey.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell, low strength.
Fd----------------- Frost	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, low strength.
Fo----------------- Frost	Severe: wetness, floods.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: wetness, low strength.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Small commercial buildings	Local roads and streets
Ge------------ Glenmora	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: low strength.
Gf------------ Gore	Severe: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: low strength, shrink-swell.
Go, Gt--------- Guyton	Severe: floods, wetness, cutbanks cave.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
Gu:*				
Guyton----------	Severe: wetness, cutbanks cave.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Messer----------	Moderate: wetness.	Slight------------	Slight------------	Moderate: low strength.
GY:*				
Guyton----------	Severe: floods, wetness, cutbanks cave.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
Cascilla---------	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.
Kd:*				
Kinder----------	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, low strength.
Messer----------	Moderate: wetness.	Slight------------	Slight------------	Moderate: low strength.
Ma------------ Malbis	Moderate: wetness.	Slight------------	Slight------------	Moderate: low strength.
Mm------------ Mamou	Moderate: wetness.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength.
Rt------------ Ruston	Slight------------	Slight------------	Slight------------	Moderate: low strength.
Wr:*				
Wrightsville-----	Severe: wetness, too clayey.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, low strength, shrink-swell.
Vidrine----------	Severe: wetness, too clayey.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell, low strength.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--SANITARY FACILITIES

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," "good," "fair," and other terms]

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Ac: Acadia	Severe: percs slowly, wetness.	Slight	Severe: too clayey, wetness.	Severe: wetness.	Poor: too clayey.
BB:*					
Basile	Severe: wetness, percs slowly, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Poor: wetness.
Guyton	Severe: floods, wetness, percs slowly.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: wetness.
Be: Beauregard	Severe: percs slowly, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey.
Bn: Bienville	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: too sandy.
Cd:*					
Caddo	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Messer	Severe: percs slowly, wetness.	Slight	Moderate: too clayey, wetness.	Slight	Fair: too clayey.
Cf: Cadeville	Severe: percs slowly.	Slight	Severe: too clayey.	Slight	Poor: too clayey.
Ch: Cahaba	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Good.
Ck:*					
Cahaba	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Good.
Bienville	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: too sandy.
Guyton	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Cr:*					
Crowley	Severe: percs slowly, wetness.	Slight	Severe: too clayey, wetness.	Severe: wetness.	Poor: too clayey.
Vidrine	Severe: percs slowly, wetness.	Slight	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey.
Fd: Frost	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Fo------------------ Frost	Severe: wetness, percs slowly, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Poor: wetness.
Ge------------------ Glenmora	Severe: percs slowly, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey.
Gf------------------ Gore	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight-----------	Poor: too clayey.
Go, Gt-------------- Guyton	Severe: floods, wetness, percs slowly.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: wetness.
Gu:*					
Guyton-------------	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Messer-------------	Severe: percs slowly, wetness.	Moderate: slope.	Moderate: too clayey, wetness.	Slight-----------	Fair: too clayey.
GY:*					
Guyton-------------	Severe: floods, wetness, percs slowly.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: wetness.
Cascilla-----------	Severe: floods.	Moderate: seepage.	Severe: floods.	Severe: floods.	Fair: too clayey.
Kd:*					
Kinder-------------	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Messer-------------	Severe: percs slowly, wetness.	Moderate: slope.	Moderate: too clayey, wetness.	Slight-----------	Fair: too clayey.
Ma------------------ Malbis	Severe: wetness.	Moderate: slope.	Moderate: wetness.	Moderate: wetness.	Good.
Mm------------------ Mamou	Severe: percs slowly, wetness.	Moderate: slope.	Moderate: too clayey, wetness.	Slight-----------	Fair: too clayey.
Rt------------------ Ruston	Slight-----------	Moderate: seepage, slope.	Slight-----------	Slight-----------	Good.
Wr:*					
Wrightsville-------	Severe: wetness, percs slowly.	Slight-----------	Severe: wetness, too clayey.	Severe: wetness.	Poor: wetness, too clayey.
Vidrine------------	Severe: percs slowly, wetness.	Slight-----------	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--CONSTRUCTION MATERIALS

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and "poor"]

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
Ac-------------------- Acadia	Poor: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
BB:*				
Basile---------------	Poor: wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
Guyton---------------	Poor: wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
Be-------------------- Beauregard	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer.
Bn-------------------- Bienville	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too sandy.
Cd:*				
Caddo----------------	Poor: wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
Messer---------------	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
Cf-------------------- Cadeville	Poor: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer.
Ch-------------------- Cahaba	Good-----------------	Poor: excess fines.	Unsuited: excess fines.	Good.
Ck:*				
Cahaba---------------	Good-----------------	Poor: excess fines.	Unsuited: excess fines.	Good.
Bienville------------	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too sandy.
Guyton---------------	Poor: wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
Cr:*				
Crowley--------------	Poor: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer, wetness.
Vidrine--------------	Poor: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Fd, Fo---------------- Frost	Poor: wetness, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
Ge-------------------- Glenmora	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
Gf-------------------- Gore	Poor: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer.
Go, Gt---------------- Guyton	Poor: wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
Gu:*				
Guyton	Poor: wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
Messer	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
GY:*				
Guyton	Poor: wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
Cascilla	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too clayey.
Kd:*				
Kinder	Poor: low strength, wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
Messer	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
Ma Malbis	Fair: low strength, wetness.	Poor: excess fines.	Unsuited: excess fines.	Fair: thin layer, too clayey.
Mm Mamou	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
Rt Ruston	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
Wr:*				
Wrightsville	Poor: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
Vidrine	Poor: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Good.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--WATER MANAGEMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe"]

Map symbol and soil name	Limitations for-- Pond reservoir areas	Limitations for-- Embankments, dikes, and levees	Features affecting-- Drainage	Features affecting-- Irrigation	Features affecting-- Terraces and diversions	Features affecting-- Grassed waterways
Ac: Acadia	Slight	Moderate: compressible, shrink-swell.	Percs slowly	Slow intake	Not needed	Favorable.
BB:*						
Basile	Slight	Moderate: erodes easily, compressible.	Percs slowly, cutbanks cave, floods.	Percs slowly, wetness, floods.	Not needed	Wetness.
Guyton	Slight	Moderate: erodes easily, compressible.	Cutbanks cave, floods, percs slowly.	Percs slowly	Not needed	Wetness.
Be: Beauregard	Slight	Moderate: wetness.	Not needed	Percs slowly, slope, erodes easily.	Percs slowly, erodes easily, wetness.	Percs slowly, erodes easily.
Bn: Bienville	Severe: seepage.	Severe: piping.	Not needed	Fast intake, slope.	Too sandy	Favorable.
Cd:*						
Caddo	Slight	Moderate: erodes easily, compressible.	Percs slowly	Wetness, percs slowly.	Not needed	Wetness.
Messer	Slight	Moderate: piping, wetness.	Slope	Percs slowly, slope, erodes easily.	Percs slowly, erodes easily.	Percs slowly, erodes easily.
Cf: Cadeville	Slight	Moderate: compressible.	Not needed	Slopes, erodes easily, slow intake.	Erodes easily, percs slowly.	Favorable.
Ch: Cahaba	Severe: seepage.	Moderate: thin layer.	Not needed	Fast intake, floods.	Too sandy	Favorable.
Ck:*						
Cahaba	Severe: seepage.	Moderate: thin layer.	Not needed	Fast intake, floods.	Too sandy	Favorable.
Bienville	Severe: seepage.	Severe: piping.	Not needed	Fast intake, slope.	Too sandy	Favorable.
Guyton	Slight	Moderate: erodes easily, compressible.	Cutbanks cave, percs slowly.	Percs slowly	Not needed	Wetness.
Cr:*						
Crowley	Slight	Moderate: compressible.	Percs slowly	Slow intake, percs slowly.	Not needed	Favorable.
Vidrine	Slight	Moderate: compressible, shrink-swell.	Percs slowly	Percs slowly	Not needed	Favorable.
Fd: Frost	Slight	Slight	Percs slowly	Percs slowly, wetness.	Not needed	Wetness.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
Fo-------------- Frost	Slight---------	Slight---------	Floods, percs slowly.	Floods, percs slowly, wetness.	Not needed-----	Wetness.
Ge-------------- Glenmora	Slight---------	Slight---------	Not needed-----	Percs slowly, slope.	Percs slowly---	Favorable.
Gf-------------- Gore	Slight---------	Moderate: hard to pack.	Not needed-----	Slope, percs slowly, erodes easily.	Erodes easily, percs slowly.	Percs slowly, erodes easily.
Go-------------- Guyton	Slight---------	Moderate: erodes easily, compressible.	Cutbanks cave, floods, percs slowly.	Percs slowly, floods.	Not needed-----	Wetness.
Gt-------------- Guyton	Slight---------	Moderate: erodes easily, compressible.	Floods, cutbanks cave, percs slowly.	Not needed-----	Not needed-----	Not needed.
Gu:*						
Guyton----------	Slight---------	Moderate: erodes easily, compressible.	Cutbanks cave, percs slowly.	Percs slowly---	Not needed-----	Wetness.
Messer----------	Slight---------	Moderate: piping, wetness.	Slope----------	Percs slowly, slope, erodes easily.	Percs slowly, erodes easily.	Percs slowly, erodes easily.
GY:*						
Guyton----------	Slight---------	Moderate: erodes easily, compressible.	Cutbanks cave, floods, percs slowly.	Percs slowly, floods.	Not needed-----	Wetness.
Cascilla--------	Moderate: seepage.	Moderate: piping, thin layer.	Not needed-----	Floods---------	Not needed-----	Erodes easily.
Kd:*						
Kinder----------	Slight---------	Severe: wetness.	Percs slowly---	Wetness, erodes easily, percs slowly.	Not needed-----	Wetness, erodes easily, percs slowly.
Messer----------	Slight---------	Moderate: piping, wetness.	Slope----------	Percs slowly, slope, erodes easily.	Percs slowly, erodes easily.	Percs slowly, erodes easily.
Ma-------------- Malbis	Moderate: seepage.	Severe: piping.	Not needed-----	Slope----------	Favorable------	Favorable.
Mm-------------- Mamou	Slight---------	Slight---------	Deep to water	Erodes easily, percs slowly.	Erodes easily, percs slowly.	Erodes easily, percs slowly.
Rt-------------- Ruston	Moderate: seepage.	Slight---------	Not needed-----	Slope----------	Favorable------	Favorable.
Wr:*						
Wrightsville-----	Slight---------	Severe: unstable fill, compressible.	Favorable, wetness, percs slowly.	Favorable, wetness, slow intake.	Not needed-----	Not needed.
Vidrine----------	Slight---------	Moderate: compressible, shrink-swell.	Percs slowly---	Percs slowly---	Not needed-----	Favorable.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--ENGINEERING PROPERTIES AND CLASSIFICATIONS

[The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated]

Map symbol and soil name	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Ac-----------------Acadia	0-7	Silt loam--------	ML, CL-ML	A-4	0	100	100	95-100	85-100	<30	NP-7
	7-14	Silt loam, silty clay loam.	CL	A-6	0	100	100	95-100	85-100	30-40	11-18
	14-58	Clay, silty clay	CH, CL	A-7-6	0	100	100	95-100	90-100	42-70	20-43
	58-68	Clay, silty clay, silty clay loam.	CH, CL	A-7-6, A-6	0	100	100	95-100	85-100	35-65	15-38
BB:*											
Basile------------	0-19	Silt loam--------	ML, CL, CL-ML	A-4	0	100	100	90-100	75-95	<30	NP-10
	19-63	Silty clay loam	CL	A-6, A-7-6	0	100	100	95-100	80-95	30-42	12-20
	63-80	Silt loam, silty clay loam.	CL	A-6, A-4, A-7-6	0	100	100	95-100	80-95	28-42	8-20
Guyton------------	0-31	Silt loam--------	ML, CL-ML	A-4	0	100	100	95-100	65-90	<27	NP-7
	31-48	Silt loam, silty clay loam, clay loam.	CL, CL-ML	A-6, A-4	0	100	100	94-100	75-95	22-40	6-18
	48-80	Silt loam, silty clay loam, clay loam.	CL, CL-ML, ML	A-6, A-4	0	100	100	95-100	51-95	<40	NP-18
Be-----------------Beauregard	0-7	Silt loam--------	ML	A-4	0	100	100	90-100	70-95	<23	NP-3
	7-14	Silt loam, silty clay loam.	CL, CL-ML	A-6, A-4	0	100	100	95-100	70-95	25-35	7-15
	14-65	Silty clay loam, silt loam.	CL	A-6	0	100	100	85-100	70-95	30-40	12-19
Bn-----------------Bienville	0-37	Loamy fine sand	SM	A-2-4, A-4	0	100	100	90-100	25-50	---	NP
	37-72	Loamy fine sand, fine sandy loam.	SM, ML	A-2-4, A-4	0	100	100	90-100	30-55	<25	NP-3
Cd:*											
Caddo-------------	0-21	Silt loam--------	ML, CL-ML	A-4	0	100	100	95-100	70-95	<27	NP-7
	21-61	Silt loam, loam, silty clay loam.	CL	A-6	0	100	100	85-100	50-90	30-40	11-18
Messer------------	0-13	Silt loam--------	ML, CL-ML	A-4	0	100	100	95-100	80-95	<27	NP-7
	13-32	Silt loam, loam, very fine sandy loam.	CL, CL-ML	A-6, A-4	0	100	100	95-100	80-95	25-33	5-12
	32-65	Silty clay loam, clay loam, loam.	CL	A-6, A-7-6	0	100	100	95-100	80-95	32-45	11-21
Cf-----------------Cadeville	0-5	Very fine sandy loam.	ML, CL-ML	A-4	0	100	100	95-100	55-65	<27	NP-7
	5-39	Silty clay, clay	CH, CL	A-7-6	0	100	100	95-100	80-95	41-60	22-35
	39-65	Clay, silty clay, silty clay loam	CH, CL	A-7-6, A-6	0	100	100	95-100	75-95	30-55	12-30
Ch-----------------Cahaba	0-10	Fine sandy loam	SM	A-4, A-2-4	0	95-100	95-100	65-90	30-45	---	NP
	10-40	Sandy clay loam, loam, clay loam.	SC, CL	A-4, A-6	0	90-100	80-100	75-90	40-75	22-35	8-15
	40-65	Sand, loamy sand, fine sandy loam.	SM, SP-SM	A-2-4	0	95-100	90-100	60-85	10-35	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
Ck:*											
Cahaba	0-16	Fine sandy loam	SM	A-4, A-2-4	0	95-100	95-100	65-90	30-45	---	NP
	16-50	Sandy clay loam, loam, clay loam.	SC, CL	A-4, A-6	0	90-100	80-100	75-90	40-75	22-35	8-15
	50-72	Sand, loamy sand, fine sandy loam.	SM, SP-SM	A-2-4	0	95-100	90-100	60-85	10-35	---	NP
Bienville	0-44	Loamy fine sand	SM	A-2-4, A-4	0	100	100	90-100	25-50	---	NP
	44-82	Loamy fine sand, fine sandy loam.	SM, ML	A-2-4, A-4	0	100	100	90-100	30-55	<25	NP-3
Guyton	0-24	Silt loam	ML, CL-ML	A-4	0	100	100	95-100	65-90	<27	NP-7
	24-60	Silt loam, silty clay loam, clay loam.	CL, CL-ML	A-6, A-4	0	100	100	94-100	75-95	22-40	6-18
Cr:*											
Crowley	0-21	Silt loam	ML, CL-ML, CL	A-4	0	100	100	95-100	80-100	<30	NP-10
	21-57	Silty clay, silty clay loam.	CH, CL	A-7-6	0	100	100	95-100	85-100	41-60	20-35
	57-74	Silty clay loam, silty clay.	CL, CH	A-7-6, A-6	0	100	100	95-100	85-100	38-60	18-35
Vidrine	0-18	Silt loam	ML, CL-ML	A-4	0	100	100	100	90-100	<27	NP-7
	18-22	Silty clay, silty clay loam.	CH, CL	A-7-6	0	100	100	100	90-100	41-60	19-32
	22-43	Silty clay loam, silty clay.	CL, CH	A-7-6, A-6	0	90-100	85-100	85-100	75-100	33-55	12-28
	43-70	Silt loam, silty clay loam, silty clay.	CL, CH	A-4, A-6, A-7-6	0	90-100	85-100	85-100	70-100	28-55	8-28
Fd Frost	0-18	Silt loam	CL-ML, CL, ML	A-4	0	100	100	100	80-100	25-31	3-10
	18-65	Silty clay loam, silt loam.	CL	A-6, A-7-6	0	100	100	100	90-100	35-50	15-25
Fo Frost	0-27	Silt loam	CL-ML, CL, ML	A-4	0	100	100	100	80-100	25-31	3-10
	27-65	Silty clay loam, silt loam.	CL	A-6, A-7-6	0	100	100	100	90-100	35-50	15-25
Ge Glenmora	0-8	Silt loam	ML, CL-ML	A-4	0	100	100	90-100	75-85	<27	NP-7
	8-23	Silty clay loam, silt loam.	CL	A-6, A-4	0	100	100	95-100	80-95	25-38	8-16
	23-64	Silty clay loam	CL	A-6	0	100	100	95-100	80-95	30-40	12-18
Gf Gore	0-6	Very fine sandy loam.	ML, CL-ML	A-4	0	100	100	95-100	60-95	<27	NP-7
	6-37	Clay, silty clay	CH	A-7-6	0	100	100	95-100	85-100	53-65	28-40
	37-92	Clay	CH	A-7-6, A-7-5	0	100	100	95-100	85-100	51-83	25-53
Go Guyton	0-18	Silt loam	ML, CL-ML	A-4	0	100	100	95-100	65-90	<27	NP-7
	18-48	Silt loam, silty clay loam, clay loam.	CL, CL-ML	A-6, A-4	0	100	100	94-100	75-95	22-40	6-18
	48-66	Silt loam, silty clay loam, clay loam.	CL, CL-ML, ML	A-6, A-4	0	100	100	95-100	51-95	<40	NP-18

See footnote at end of table.

TABLE 14.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Gt----------------- Guyton	0-26	Silt loam--------	ML, CL-ML	A-4	0	100	100	95-100	65-90	<27	NP-7
	26-60	Silt loam, silty clay loam, clay loam.	CL, CL-ML	A-6, A-4	0	100	100	94-100	75-95	26-40	6-18
Gu:* Guyton------------	0-21	Silt loam--------	ML, CL-ML	A-4	0	100	100	95-100	65-90	<27	NP-7
	21-60	Silt loam, silty clay loam, clay loam.	CL, CL-ML	A-6, A-4	0	100	100	94-100	75-95	22-40	6-18
Messer-------------	0-32	Silt loam--------	ML, CL-ML	A-4	0	100	100	95-100	80-95	<27	NP-7
	32-65	Silty clay loam, clay loam, loam.	CL	A-6, A-7-6	0	100	100	95-100	80-95	32-45	11-21
GY:* Guyton------------	0-24	Silt loam--------	ML, CL-ML	A-4	0	100	100	95-100	65-90	<27	NP-7
	24-67	Silt loam, silty clay loam, clay loam.	CL, CL-ML	A-6, A-4	0	100	100	94-100	75-95	22-40	6-18
Cascilla----------	0-12	Silt loam--------	ML, CL-ML, CL	A-4, A-6	0	100	100	95-100	85-95	20-35	3-15
	12-66	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6	0	100	100	95-100	90-100	20-39	5-15
Kd:* Kinder------------	0-17	Silt loam--------	ML, CL-ML, CL	A-4	0	100	100	95-100	60-100	<28	NP-8
	17-54	Silty clay loam, loam, silt loam.	CL	A-6, A-7-6	0	100	100	95-100	70-100	32-43	11-20
	54-65	Silt loam, loam, silty clay loam.	CL-ML, CL	A-6, A-4	0	100	100	95-100	70-100	25-38	5-16
Messer------------	0-28	Silt loam--------	ML, CL-ML	A-4	0	100	100	95-100	80-95	<27	NP-7
	28-65	Silty clay loam, clay loam, loam.	CL	A-6, A-7-6	0	100	100	95-100	80-95	32-45	11-21
Ma----------------- Malbis	0-11	Fine sandy loam	SM, ML	A-4	0	100	97-100	92-97	40-62	<30	NP-5
	11-34	Loam, sandy clay loam, clay loam.	CL-ML, CL	A-4	0	99-100	95-99	91-97	55-62	26-31	5-9
	34-74	Sandy clay loam, clay loam.	ML	A-4, A-5, A-7	0	98-100	96-100	90-97	56-71	36-46	4-13
Mm----------------- Mamou	0-16	Silt loam--------	ML, CL-ML	A-4	0	100	100	100	90-100	<27	NP-7
	16-47	Silty clay loam	CL	A-7-6, A-6	0	100	100	100	90-100	34-49	13-28
	47-60	Loam, silty clay loam, silt loam.	CL	A-6, A-7-6	0	100	100	100	90-100	32-45	11-22
Rt----------------- Ruston	0-10	Fine sandy loam	SM, ML	A-4, A-2-4	0	85-100	78-100	65-100	30-75	<20	NP-3
	10-40	Sandy clay loam, loam, clay loam.	SC, CL	A-6	0	85-100	78-100	70-100	36-75	30-40	11-18
	40-50	Fine sandy loam, sandy loam.	SM, ML, CL-ML, SM-SC	A-4, A-2-4	0	85-100	78-100	65-100	30-75	<27	NP-7
	50-65	Sandy clay loam, loam, clay loam.	SC, CL	A-6	0	85-100	78-100	70-100	36-75	30-40	11-18

See footnote at end of table.

TABLE 14.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Wr:*											
Wrightsville------	0-13	Silt loam-------	ML, CL, CL-ML	A-4, A-6	0	100	95-100	90-100	75-100	<33	NP-20
	13-49	Silty clay, clay, silty clay loam.	CH, CL, MH	A-7	0	100	100	95-100	90-100	41-65	22-40
	49-60	Silty clay loam, silty clay, clay.	CL, CH	A-7, A-6	0	100	95-100	95-100	90-100	35-65	16-40
Vidrine-----------	0-15	Silt loam-------	ML, CL-ML	A-4	0	100	100	100	90-100	<27	NP-7
	15-37	Silty clay, silty clay loam.	CH, CL	A-7-6	0	100	100	100	90-100	41-60	19-32
	37-75	Silt loam, silty clay loam, silty clay.	CL, CH	A-4, A-6, A-7-6	0	90-100	85-100	85-100	70-100	28-55	8-28

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS

[The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile.]

Map symbol and soil name	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors	
						K	T
	In	In/hr	In/in	pH			
Ac----------------- Acadia	0-7	0.6-2.0	0.16-0.23	4.5-6.0	Low------------	0.43	4
	7-14	0.6-2.0	0.16-0.22	4.5-5.5	Moderate--------	0.32	
	14-58	<0.06	0.15-0.18	4.5-6.0	High-----------	0.32	
	58-68	<0.2	0.15-0.20	4.5-7.8	High-----------	0.32	
BB:*							
Basile-----------	0-19	0.6-2.0	0.18-0.20	5.1-6.0	Low------------	0.43	3
	19-63	0.06-0.2	0.20-0.22	5.6-8.4	Moderate--------	0.37	
	63-80	0.06-0.2	0.18-0.20	6.1-8.4	Low------------	0.43	
Guyton-----------	0-31	0.6-2.0	0.20-0.23	3.6-6.0	Low------------	0.49	3
	31-48	0.06-0.2	0.15-0.22	3.6-6.0	Low------------	0.37	
	48-80	0.06-2.0	0.15-0.22	3.6-6.0	Low------------	0.37	
Be----------------- Beauregard	0-7	0.6-2.0	0.20-0.22	5.1-6.5	Low------------	0.43	4
	7-14	0.2-0.6	0.20-0.22	4.5-5.5	Low------------	0.37	
	14-65	0.06-0.2	0.20-0.22	4.5-6.0	Low------------	0.37	
Bn----------------- Bienville	0-37	2.0-6.0	0.08-0.11	4.5-6.5	Low------------	0.20	5
	37-72	2.0-6.0	0.08-0.13	4.5-6.0	Low------------	0.20	
Cd:*							
Caddo------------	0-21	0.6-2.0	0.18-0.23	4.5-6.0	Low------------	0.43	3
	21-61	0.06-0.2	0.20-0.22	4.5-6.0	Low------------	0.37	
Messer-----------	0-13	0.6-2.0	0.15-0.21	4.5-6.0	Low------------	0.43	4
	13-32	0.2-0.6	0.20-0.22	4.5-6.0	Low------------	0.43	
	32-65	0.06-0.2	0.15-0.20	4.5-6.0	Low------------	0.37	
Cf----------------- Cadeville	0-5	0.6-2.0	0.14-0.22	5.1-6.0	Low------------	0.43	3
	5-39	<0.06	0.18-0.20	4.0-5.5	High-----------	0.32	
	39-65	<0.2	0.18-0.20	4.0-5.5	High-----------	0.32	
Ch----------------- Cahaba	0-10	2.0-6.0	0.05-0.14	4.5-6.0	Very low--------	0.24	4
	10-40	0.6-2.0	0.12-0.15	4.5-6.0	Low------------	0.28	
	40-65	6.0-20	0.05-0.10	4.5-6.0	Very low--------	0.24	
Ck:*							
Cahaba-----------	0-16	2.0-6.0	0.05-0.14	4.5-6.0	Very low--------	0.24	4
	16-50	0.6-2.0	0.12-0.15	4.5-6.0	Low------------	0.28	
	50-72	6.0-20	0.05-0.10	4.5-6.0	Very low--------	0.24	
Bienville--------	0-44	2.0-6.0	0.08-0.11	4.5-6.5	Low------------	0.20	5
	44-82	2.0-6.0	0.08-0.13	4.5-6.0	Low------------	0.20	
Guyton-----------	0-24	0.6-2.0	0.20-0.23	3.6-6.0	Low------------	0.49	3
	24-60	0.06-0.2	0.15-0.22	3.6-6.0	Low------------	0.37	
Cr:*							
Crowley----------	0-21	0.2-0.6	0.20-0.23	4.5-6.0	Low------------	0.43	4
	21-57	<0.06	0.19-0.21	4.5-6.5	High-----------	0.32	
	57-74	0.06-0.2	0.20-0.22	5.6-8.4	Moderate--------	0.32	
Vidrine----------	0-18	0.6-2.0	0.20-0.23	4.5-6.0	Low------------	0.43	4
	18-22	0.06-0.2	0.18-0.20	4.5-6.0	High-----------	0.32	
	22-43	0.06-0.2	0.18-0.20	6.1-8.4	High-----------	0.32	
	43-70	0.06-0.2	0.18-0.22	6.1-8.4	Moderate--------	0.32	
Fd----------------- Frost	0-18	0.2-0.6	0.21-0.23	4.5-6.5	Low------------	0.43	3
	18-65	0.06-0.2	0.20-0.22	4.5-8.4	Moderate--------	0.37	
Fo----------------- Frost	0-27	0.2-0.6	0.21-0.23	4.5-6.5	Low------------	0.43	3
	27-65	0.06-0.2	0.20-0.22	4.5-8.4	Moderate--------	0.37	

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Map symbol and soil name	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors	
						K	T
	In	In/hr	In/in	pH			
Ge----------------- Glenmora	0-8	0.6-2.0	0.20-0.23	4.5-6.0	Low------------	0.43	3
	8-23	0.6-2.0	0.18-0.20	4.5-6.0	Low------------	0.37	
	23-64	0.06-0.2	0.18-0.20	4.5-6.0	Moderate-------	0.37	
Gf----------------- Gore	0-6	0.6-2.0	0.20-0.22	5.1-6.0	Low------------	0.43	3
	6-37	<0.06	0.14-0.18	4.5-7.3	High-----------	0.32	
	37-92	<0.06	0.14-0.18	5.6-7.8	High-----------	0.32	
Go----------------- Guyton	0-18	0.6-2.0	0.20-0.23	3.6-6.0	Low------------	0.49	3
	18-48	0.06-0.2	0.15-0.22	3.6-6.0	Low------------	0.37	
	48-66	0.06-2.0	0.15-0.22	3.6-8.4	Low------------	0.37	
Gt----------------- Guyton	0-26	0.6-2.0	0.20-0.23	3.6-6.0	Low------------	0.49	3
	26-60	0.06-0.2	0.15-0.22	3.6-6.0	Low------------	0.37	
Gu:*							
Guyton-----------	0-21	0.6-2.0	0.20-0.23	3.6-6.0	Low------------	0.49	3
	21-60	0.06-0.2	0.15-0.22	3.6-6.0	Low------------	0.37	
Messer-----------	0-32	0.6-2.0	0.15-0.21	4.5-6.0	Low------------	0.43	4
	32-65	0.06-0.2	0.15-0.20	4.5-6.0	Low------------	0.37	
GY:*							
Guyton-----------	0-24	0.6-2.0	0.20-0.23	3.6-6.0	Low------------	0.49	3
	24-67	0.06-0.2	0.15-0.22	3.6-6.0	Low------------	0.37	
Cascilla---------	0-12	0.6-2.0	0.18-0.22	4.5-5.5	Low------------	0.43	5
	12-66	0.6-2.0	0.16-0.20	4.5-5.5	Low------------	0.43	
Kd:*							
Kinder-----------	0-17	0.6-2.0	0.15-0.21	4.5-6.0	Low------------	0.43	5
	17-54	0.06-0.2	0.15-0.20	4.5-6.5	Moderate-------	0.37	
	54-65	0.2-0.6	0.15-0.20	4.5-8.4	Low------------	0.37	
Messer-----------	0-28	0.6-2.0	0.15-0.21	4.5-6.0	Low------------	0.43	4
	28-65	0.06-0.2	0.15-0.20	4.5-6.0	Low------------	0.37	
Ma----------------- Malbis	0-11	0.6-2.0	0.10-0.15	5.1-6.0	Low------------	0.28	5
	11-34	0.6-2.0	0.12-0.20	4.5-5.5	Low------------	0.28	
	34-74	0.2-0.6	0.12-0.17	4.5-5.5	Low------------	0.28	
Mm----------------- Mamou	0-16	0.2-0.6	0.21-0.23	5.1-6.5	Low------------	0.43	4
	16-47	0.06-0.2	0.20-0.22	5.1-6.5	Moderate-------	0.37	
	47-60	0.2-0.6	0.18-0.22	6.1-7.3	Moderate-------	0.37	
Rt----------------- Ruston	0-10	0.6-2.0	0.09-0.16	5.1-6.5	Low------------	0.32	5
	10-40	0.6-2.0	0.12-0.17	4.5-6.0	Low------------	0.28	
	40-50	0.6-2.0	0.12-0.15	4.5-6.0	Low------------	0.32	
	50-65	0.6-2.0	0.12-0.17	4.5-6.0	Low------------	0.28	
Wr:*							
Wrightsville-----	0-13	0.2-0.6	0.16-0.24	3.6-5.5	Low------------	0.49	5
	13-49	<0.06	0.14-0.22	3.6-5.5	High-----------	0.37	
	49-60	<0.06	0.14-0.22	3.6-8.4	High-----------	0.43	
Vidrine----------	0-15	0.6-2.0	0.20-0.23	4.5-6.0	Low------------	0.43	4
	15-37	0.06-0.2	0.18-0.20	4.5-6.0	High-----------	0.32	
	37-75	0.06-0.2	0.18-0.22	6.1-8.4	Moderate-------	0.32	

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 16.--SOIL AND WATER FEATURES

[See text for descriptions of symbols and such terms as "brief," "apparent," and "perched." The symbol > means more than. Absence of an entry indicates that the feature is not a concern]

Map symbol and soil name	Hydrologic group	Flooding			High water table			Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Uncoated steel	Concrete
					Ft				
Ac----------------- Acadia	D	None---------	---	---	0.5-1.5	Perched	Dec-Apr	High-----	High.
BB:*									
Basile------------	D	Frequent----	Brief to long.	Jan-Dec	0-1.5	Apparent	Dec-May	High-----	Moderate.
Guyton------------	D	Frequent----	Very brief to long.	Jan-Dec	0-1.5	Perched	Dec-May	High-----	Moderate.
Be----------------- Beauregard	C	None---------	---	---	1.5-3.0	Apparent	Dec-Mar	High-----	High.
Bn----------------- Bienville	A	None---------	---	---	4.0-6.0	Apparent	Dec-Apr	Low------	Moderate.
Cd:*									
Caddo-------------	D	None---------	---	---	0-2.0	Apparent	Dec-Apr	High-----	Moderate.
Messer------------	C	None---------	---	---	2.0-4.0	Perched	Dec-May	High-----	Moderate.
Cf----------------- Cadeville	D	None---------	---	---	>6.0	---	---	Moderate	Moderate.
Ch----------------- Cahaba	B	None---------	---	---	>6.0	---	---	Moderate	Moderate.
Ck:*									
Cahaba------------	B	None---------	---	---	>6.0	---	---	Moderate	Moderate.
Bienville---------	A	None---------	---	Dec-Jun	4.0-6.0	Apparent	Dec-Apr	Low------	Moderate.
Guyton------------	D	None---------	---	---	0-1.5	Perched	Dec-May	High-----	Moderate.
Cr:*									
Crowley-----------	D	None---------	---	---	0.5-1.5	Perched	Dec-Apr	High-----	Moderate.
Vidrine-----------	D	None---------	---	---	1.0-2.0	Perched	Dec-Apr	High-----	Moderate.
Fd----------------- Frost	D	None---------	---	---	0-1.5	Apparent	Dec-Apr	High-----	Moderate.
Fo----------------- Frost	D	Occasional	Brief to long.	Dec-Jun	0-1.5	Apparent	Dec-Apr	High-----	Moderate.
Ge----------------- Glenmora	C	None---------	---	---	2.0-3.0	Apparent	Dec-Apr	High-----	Moderate.
Gf----------------- Gore	D	None---------	---	---	>6.0	---	---	High-----	Low.
Go----------------- Guyton	D	Occasional	Very brief to long.	Jan-Dec	0-1.5	Perched	Dec-May	High-----	Moderate.
Gt----------------- Guyton	D	Frequent----	Very long	Jan-Dec	+1-0.5	Perched	Jan-Dec	High-----	Moderate.
Gu:*									
Guyton------------	D	None---------	---	---	0-1.5	Perched	Dec-May	High-----	Moderate.

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Map symbol and soil name	Hydrologic group	Flooding			High water table			Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Uncoated steel	Concrete
					Ft				
Gu:*									
Messer-----------	C	None--------	---	---	2.0-4.0	Perched	Dec-May	High-----	Moderate.
GY:*									
Guyton-----------	D	Frequent----	Very brief to long.	Jan-Dec	0-1.5	Perched	Dec-May	High-----	Moderate.
Cascilla---------	B	Frequent----	Brief to very long.	Jan-Apr	>6.0	---	---	Low------	Moderate.
Kd:*									
Kinder-----------	C	None--------	---	---	0-2.0	Perched	Dec-Apr	High-----	Moderate.
Messer-----------	C	None--------	---	---	2.0-4.0	Perched	Dec-May	High-----	Moderate.
Ma---------------- Malbis	B	None--------	---	---	2.5-4.0	Perched	Dec-Mar	Moderate	Moderate.
Mm---------------- Mamou	C	None--------	---	---	3.0-4.0	Perched	Dec-Apr	High-----	Moderate.
Rt---------------- Ruston	B	None--------	---	---	>6.0	---	---	Moderate	Moderate.
Wr:*									
Wrightsville-----	D	None--------	---	---	0.5-1.5	Perched	Dec-Apr	High-----	High.
Vidrine----------	D	None--------	---	---	1.0-2.0	Perched	Dec-Apr	High-----	Moderate.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 17.--ENGINEERING TEST DATA

[Dashes indicate data were not available. NP means nonplastic]

Soil name, report number, horizon, and depth in inches	Classification		Grain size distribution							Liquid limit	Plasticity index	Moisture density	
			Percentage passing sieve--				Percentage smaller than--						
	AASHTO	Unified	No. 4	No. 10	No. 40	No. 200	.02 mm	.005 mm	.002 mm			Max. dry density	Optimum moisture
										Pct		Lb/Ft3	Pct
Glenmora silt loam:[1] (S73LA-003-001)													
B21t-----16 to 23	A-4 (06)	CL	100	100	100	86	50	28	22	27	9	105	18
Bt & A'2 23 to 44	A-6 (10)	CL	100	100	100	83	47	28	22	32	14	108	17
Guyton silt loam:[2] (S73LA-003-002)													
A2g-------4 to 25	A-4 (00)	ML	100	100	99	85	42	14	11	--	NP	107	18
B2tg-----25 to 64	A-6 (13)	CL	100	100	99	89	57	35	30	33	16	106	18
Guyton silt loam:[3] (S59LA-003-001)													
A1--------0 to 5	A-4 (00)	ML	100	100	99	82	46	14	8	--	NP	--	--
A22g-----22 to 32	A-4 (03)	CL-ML	100	100	98	83	54	21	14	22	6	--	--
Btg------32 to 42	A-6 (09)	CL	100	100	97	85	54	27	21	28	13	--	--
Bienville loamy fine sand:[4] (S76LA-003-007)													
A1--------0 to 7	A-2-4(00)	SM	100	100	100	33	26	5	3	--	NP	107	13
B22t-----33 to 60	A-4 (00)	SM	100	100	100	44	25	12	10	--	NP	115	13
Frost silt loam:[5] (S76LA-003-002)													
Ap--------0 to 6	A-4 (02)	ML	100	100	100	99	76	23	13	25	3	98	22
B21tg----30 to 46	A-6 (21)	CL	100	100	100	99	82	42	32	40	20	100	21
Gore silt loam:[6] (S76LA-003-005)													
A1--------0 to 3	A-4 (05)	CL-ML	100	100	100	95	47	27	20	25	7	105	18
B21t------6 to 14	A-7-6(26)	CL	100	100	100	97	73	53	49	49	23	95	24
B3t------37 to 45	A-7-5(63)	CH	100	100	100	99	98	85	69	83	53	91	27
Mamou silt loam:[7] (S76LA-003-003)													
Ap--------0 to 8	A-4 (00)	ML	100	100	100	97	35	11	9	--	NP	107	13
B21tg----16 to 24	A-6 (14)	CL	100	100	100	100	64	36	32	34	13	101	21
C1-------47 to 60	A-6 (18)	CL	100	100	100	100	38	32	29	34	18	108	17

See footnotes at end of table.

TABLE 17.--ENGINEERING TEST DATA--Continued

Soil name, report number, horizon, and depth in inches	Classification		Grain size distribution							Liquid limit	Plasticity index	Moisture density	
			Percentage passing sieve--				Percentage smaller than--						
	AASHTO	Unified	No. 4	No. 10	No. 40	No. 200	.02 mm	.005 mm	.002 mm			Max. dry density	Optimum moisture
										Pct		Lb/Ft3	Pct
Vidrine silt loam:[8] (S76LA-003-001)													
Ap--------0 to 7	A-4 (02)	CL-ML	100	100	100	96	62	19	15	23	4	101	21
B21tg----22 to 34	A-7-6(27)	CL	100	100	100	100	80	46	39	46	24	97	23
B3g------43 to 61	A-6 (22)	CL	100	100	100	100	71	34	29	39	21	105	18
Wrightsville silt loam:[9] (S76LA-003-004)													
A2g-------4 to 13	A-6 (17)	CL	100	100	96	94	84	41	27	32	20	100	21
B2tg-----21 to 34	A-7-6(28)	MH	100	100	100	99	93	62	47	52	23	94	25

[1]Glenmora silt loam: 1 mile southwest of Oakdale, 100 feet east of Louisiana Highway 1152 on north edge of powerline, NW1/4SE1/4 sec. 16, T. 3 S., R. 3 W.

[2]Guyton silt loam: 1 mile southwest of Oakdale, 150 feet east of Louisiana Highway 1152, NW1/4SE1/4 sec. 16, T. 3 S., R. 3 W.

[3]Guyton silt loam: 1 mile west of service station, SE1/4NW1/4 sec. 31, T. 2 S., R. 3 W.

[4]Bienville loamy fine sand: 4.0 miles northwest of Oberlin, 1.4 miles northeast of Highway 26, 1,500 feet south of Pine Chapel Road, SW1/4SW1/4 sec. 31, T. 4 S., R. 4 W.

[5]Frost silt loam: 2.3 miles southwest of Kinder, 1.2 miles west of U.S. Highway 165 on blacktop road, SW1/4SW1/4 sec. 9. T. 7 S., R. 5 W.

[6]Gore silt loam: 3.5 miles southeast of Soileau, Spanish Land Grant sec. 38, T. 6 S., R. 2 W. This pedon is a taxadjunct to the Gore series. The liquid limit and plasticity index for the 6- to 14-inch layer are slightly lower than those allowed for the series. Also, the Unified classification is CL, which is 1 percent out of the range of the CH classification.

[7]Mamou silt loam: 6 miles southeast of Oberlin, 0.5 mile south of junction of Highway 26 and Highway 104, SE1/4NE1/4 sec. 33, T. 5 S., R. 3 W.

[8]Vidrine silt loam: 4 miles east of Kinder, 250 feet north of U.S. Highway 190, 150 feet west of Parish Road 2-30, SE1/4SE1/4 sec. 33, T. 6 S., R. 4 W.

[9]Wrightsville silt loam: 10.5 miles southeast of Oberlin, center of Spanish Land Grant sec. 39, T. 6 S., R. 2 W.

TABLE 18.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Acadia	Fine, montmorillonitic, thermic Aeric Ochraqualfs
Basile	Fine-silty, mixed, thermic Typic Glossaqualfs
Beauregard	Fine-silty, siliceous, thermic Plinthaquic Paleudults
Bienville	Sandy, siliceous, thermic Psammentic Paleudalfs
Caddo	Fine-silty, siliceous, thermic Typic Glossaqualfs
Cadeville	Fine, mixed, thermic Albaquic Hapludalfs
Cahaba	Fine-loamy, siliceous, thermic Typic Hapludults
Cascilla	Fine-silty, mixed, thermic Fluventic Dystrochrepts
Crowley	Fine, montmorillonitic, thermic Typic Albaqualfs
Frost	Fine-silty, mixed, thermic Typic Glossaqualfs
Glenmora	Fine-silty, siliceous, thermic Glossaquic Paleudalfs
*Gore	Fine, mixed, thermic Vertic Paleudalfs
Guyton	Fine-silty, siliceous, thermic Typic Glossaqualfs
Kinder	Fine-silty, siliceous, thermic Typic Glossaqualfs
Malbis	Fine-loamy, siliceous, thermic Plinthic Paleudults
Mamou	Fine-silty, siliceous, thermic Aeric Albaqualfs
Messer	Coarse-silty, siliceous, thermic Haplic Glossudalfs
Ruston	Fine-loamy, siliceous, thermic Typic Paleudults
Vidrine	Coarse-silty over clayey, mixed, thermic Glossaquic Hapludalfs
Wrightsville	Fine, mixed, thermic Typic Glossaqualfs

* The soil is a taxadjunct to the series. See text for a description of those characteristics of the soil that are outside the range of the series.

TABLE 19.--SOILS AS RELATED TO TOPOGRAPHY, RUNOFF, DRAINAGE, AND WATER TABLE

Soil series	Topography	Runoff	Internal drainage class	Seasonal high water table	
				Depth	Duration
Acadia	Nearly level and very gently sloping.	Slow	Somewhat poorly drained.	0.5-1.5	Dec.-Apr.
Basile	Level and nearly level	Very slow	Poorly drained.	0.0-1.5	Dec.-May
Beauregard	Nearly level and very gently sloping.	Medium	Moderately well drained.	1.5-3.0	Dec.-Mar.
Bienville	Nearly level and gently sloping.	Slow	Somewhat excessively drained.	4.0-6.0	Dec.-Apr.
Caddo	Level and nearly level.	Slow	Poorly drained.	0.0-2.0	Dec.-Apr.
Cadeville	Nearly level to gently sloping.	Medium	Moderately well drained.	>6.0	Jan.-Dec.
Cahaba	Nearly level to gently sloping.	Medium	Well drained	>6.0	Jan.-Dec.
Cascilla	Level and nearly level.	Slow	Well drained	>6.0	Jan.-Dec.
Crowley	Level and nearly level.	Very slow	Somewhat poorly drained.	0.5-1.5	Dec.-Apr.
Frost	Level and nearly level.	Slow and very slow.	Poorly drained.	0.0-1.5	Dec.-Apr.
Glenmora	Nearly level and very gently sloping.	Medium	Moderately well drained.	2.0-3.0	Dec.-Apr.
Gore	Very gently sloping and gently sloping.	Rapid	Moderately well drained.	>6.0	Jan.-Dec.
Guyton	Level and nearly level.	Very slow and slow.	Poorly drained.	0.0-1.5	Dec.-May
Kinder	Level and nearly level.	Slow	Poorly drained.	0.0-2.0	Dec.-Apr.
Malbis	Nearly level to gently sloping.	Medium	Moderately well drained.	2.5-4.0	Dec.-Mar.
Mamou	Very gently sloping.	Medium	Somewhat poorly drained.	3.0-4.0	Dec.-Apr.
Messer	Nearly level to gently sloping.	Medium	Moderately well drained.	2.0-4.0	Dec.-Apr.
Ruston	Nearly level to gently sloping.	Medium	Well drained	>6.0	Jan.-Dec.
Vidrine	Level to gently sloping.	Medium	Somewhat poorly drained.	1.0-2.0	Dec.-Apr.
Wrightsville	Level and nearly level.	Slow	Poorly drained.	0.5-1.5	Dec.-Apr.

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